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To:

Steve Morrow

From: Date:

Chris Ricardi June 30, 2010

Subject: Interim Response Steps Work Plan Slurry Wall Monitoring Program 1Q10-February

DATA VALIDATION REPORT FEBRUARY 2010 SLURRY WALL SURFACE WATER AND GROUNDWATER OLIN CHEMICAL SUPERFUND SITE WILMINGTON, MASSACHUSETTS

TestAmerica Laboratories Data Sets 360-26874-1, 360-26898-1

## 1.0 INTRODUCTION

Groundwater and surface water samples were collected from the Olin Chemical Superfund Site from February 15 to February 18, 2010. Samples were analyzed by TestAmerica Laboratories in Westfield, Massachusetts. Data were reported in sample delivery groups (SDGs) 360-26874-1 and 360-26898-1. A summary of samples included in this review is contained in Table 1. Samples reviewed in this report were analyzed for the following USEPA SW-846 (USEPA, 1996), USEPA wastewater (USEPA, 1993), or Standard Methods (APHA, 1995):

- dissolved metals (aluminum and chromium) by USEPA Method 6010B in groundwater
- dissolved and total metals (aluminum, chromium, and sodium) by USEPA Method 6010B in surface water
- general chemistry analyses for ammonia by USEPA Method 350.1 (Lachat 10-107-06-1), chloride, sulfate, nitrate, and nitrite by USEPA Method 300, and specific conductance by SM18 SM 2510B

The Draft Interim Response Steps Work Plan (MACTEC, 2007) and the MassDEP Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP) [MassDEP, 2004] were used as references during the review. Analytical packages were reviewed using the Level 1 Data Quality Evaluation checklists that were developed for the Olin Wilmington annual and quarterly groundwater monitoring tasks. Final sample results are presented on data summaries in Table 2. Validation reason codes were associated with final results that have been qualified. Table 3 presents analytical results that were qualified and the associated reason codes.

With the exception of the data qualification items discussed in the sections below, results are determined to be usable as reported by the laboratory.

## 2.0 METALS

Data were reviewed for the following parameters:

- Data Completeness
- Holding Time



Blanks

- \* Matrix Spike Analysis
- \* Field Duplicate Results
- \* Laboratory Control Sample/Laboratory Control Sample Duplicate Analysis
- Detection Limits
  - Dissolved vs. Total Metals Comparison
- \* = indicates that criteria were met for this parameter

## Blanks

A low level detection of chromium  $(1.6 \mu g/L)$  was reported in the method blank associated with a subset of surface water samples in SDG 360-26898-1. The chromium results in associated samples were qualified (B) by the lab to identify the associated blank detection. Sample results were greater than the 5X the blank concentration and the B qualifiers were removed from chromium results in the final data set.

## Dissolved vs. Total Metals Comparison

Dissolved sodium concentrations were over ten percent greater than total sodium concentrations in a subset of surface water samples in SDG 360-26898-1. The results for total and dissolved sodium in samples OC-SW-SD-17-0.2 and OC-SW-ISCO-1-0.2 were qualified estimated J.

## 3.0 GENERAL CHEMISTRY - Ammonia, Chloride, Sulfate, Nitrate, Nitrite, and Specific Conductance

Data were reviewed for the following parameters:

- Data Completeness
- \* Holding Time
- \* Blanks
- Matrix Spike Analysis
- Field Duplicate Analysis
- Laboratory Duplicate Analysis
- \* Laboratory Control Sample/Laboratory Control Sample Duplicate Analysis Detection Limits
- \* = indicates that criteria were met for this parameter

## **Detection Limits**

The reporting limits for nitrite in samples OC-SW-SD-17-0.2 and OC-SW-PZ-16RR-0.2-DUP were elevated above the project goal of 0.01 mg/L to 0.1 mg/L due to a 10X dilution.



Except for the validation actions noted above, the results are interpreted to be usable as reported by TestAmerica.

Chris Ricards	6/30/10
Chris Ricardi, NRCC-EAC Senior Chemist	Date
In J Murphy	6/30/10
Michael Murphy	Date
Project Principal	

## References:

- American Public Health Association (APHA), 1995. "Standard Methods for Examination of Water and Wastewater"; 19th Edition; APHA, 1015 Fifteenth St., NW. Washington, D.C. 20005.
- MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site; 51 Eames Street, Wilmington, Massachusetts; July 25, 2007.
- Massachusetts Department of Environmental Protection (MassDEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.
- U.S. Environmental Protection Agency (USEPA), 1993. "Methods for Chemical Analysis and Water and Wastes (MCAWW)", EPA/600/4-79-020 (March 1983) with updates and supplements EPA/600/4-91-010 (June 1991), EPA/600/R-92-129 (August 1992) and EPA/600/R-93-100 (August 1993).
- U.S. Environmental Protection Agency (USEPA), 1996. "Test Methods for Evaluating Solid Waste"; Laboratory Manual Physical/Chemical Methods; Office of Solid Waste and Emergency Response; Washington, DC; SW-846; November 1986; Revision 4 -December 1996.

## Table 1 Sample Summary - 360-26874-1 360-26898-1 **Data Validation Report**

## February 2010 Slurry Wall Groundwater and Surface Water Olin Chemical Superfund Site Wilmington, Massachusetts

				SW846 6010B Total	SW846 6010B Filtered	E350.1 (QuickChem 10-107-06-1-B)	SM 2510B	40CFR136A 300.0
Lab Sample ID	Location	Sample ID	Sample Date					
Slurry Wall / Cap	Groundwater							
360-26874-5	GW-202D	OC-GW-202D	2/17/2010		2	1	1	2
360-26874-3	GW-202S	OC-GW-202S	2/17/2010		2	1	1	2
360-26874-4	GW-202S	OC-GW-202S-DUP	2/17/2010		2	1	1	2
360-26874-2	GW-25	OC-GW-25	2/15/2010		2	1	1	2
360-26874-7	GW-78S	OC-GW-78S	2/17/2010		2	1	1	2
360-26874-6	GW-79S	OC-GW-79S	2/17/2010		2	1	1	2
360-26874-1	PZ-17RR	OC-PZ-17RR	2/15/2010		2	1	1	2
Slurry Wall / Cap	Surface Water							
360-26898-8	ISCO1	OC-SW-ISCO-1-0.2	2/18/2010	3	3	1	1	4
360-26898-2	ISCO2	OC-SW-ISCO-2-0.2	2/18/2010	3	3	1	1	4
360-26898-1	ISCO3	OC-SW-ISCO-3-0.2	2/18/2010	3	3	1	1	4
360-26898-3	PZ-16RR	OC-SW-PZ-16RR-0.2	2/18/2010	3	3	1	1	4
360-26898-4	PZ-16RR	OC-SW-PZ-16RR-0.2-DUP	2/18/2010	3	3	1	1	4
360-26898-5	PZ-17RR	OC-SW-PZ-17RR-0.2	2/18/2010	3	3	1	1	4
360-26898-7	PZ-18R	OC-SW-PZ-18R-0.2	2/18/2010	3	3	1	1	4
360-26898-6	SD-17	OC-SW-SD-17-0.2	2/18/2010	3	3	1	1	4

Number listed under method indicates number of target analytes reported.

Prepared by / Date: KJC 03/05/10

Checked by / Date: TLC 06/22/10

## Table 2

## Final Results Summary - 360-26874 & 360-26898 February 2010 Slurry Wall / Cap Groundwater and Surface Water Olin Chemical Superfund Site Wilmington, Massachusetts

			Loc Name	GW-2	202D	GW-2	02S	GW-	202S	GW	-25	GW	-78S	GW-	798	PZ-1	7RR
			Field Sample ID	OC-GW	V-202D	OC-GW	/-202S	OC-GW-2	02S-DUP	OC-G	W-25	OC-G	W-78S	OC-GI	N-79S	OC-PZ	-17RR
			Field Sample Date	02/1	7/10	02/17	7/10	02/1	7/10	02/1	5/10	02/1	17/10	02/1	7/10	02/1	5/10
			QC Code	F	S	FS	3	F	D	F	S	F	S	F	S	F	
		Lab San	ple Delivery Group	360-26	8874-1	360-26	874-1	360-26	6874-1	360-26	874-1	360-2	6874-1	360-26	8874-1	360-26	
Frac	Method	Analyte	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	17000		100	U	100	U	100	U	100	U	100	U	100	
F	SW6010	Chromium	ug/l	1200		4.2	J	4.2	J	2.6	J	1.7	J	8.9		3.1	
N	E300	Chloride	mg/l	320		44		44		41		21		200		19	
N	E300	Sulfate	mg/l	2300		400		410		100		530		1500		470	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	300		69		69		38		56		180		57	
N	SM2510B	LAB SPECIFIC CONDUC	CTANC umhos/cm	4600		1200		1200		570		1300		3300		1400	

Notes:

N = normal

F = filtered

FS = field sample

FD = field duplicate

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Prepared by / Date:

KJC 06/24/10

Checked by / Date:

TLC 06/24/10

# Table 2 Final Results Summary - 360-26874 & 360-26898 February 2010 Slurry Wall / Cap Groundwater and Surface Water Olin Chemical Superfund Site Wilmington, Massachusetts

			Loc Name	ISC	001	ISC	02	ISC	03	PZ-16	RR	PZ-16	RR	PZ-17	7RR
		F	ield Sample ID	OC-SW-I	SCO-1-0.2	OC-SW-IS	CO-2-0.2	OC-SW-IS	CO-3-0.2	OC-SW-PZ-	16RR-0.2	OC-SW-PZ-16	RR-0.2-DUP	OC-SW-PZ-	-17RR-0.2
		Fiel	d Sample Date	02/	18/10	02/1	8/10	02/18	3/10	02/18	/10	02/18	/10	02/18	3/10
		, garage	QC Code	F	s	F	S	FS	3	FS	3	FD		FS	3
		Lab Sample I	Delivery Group	360-2	6898-1	360-26	8898-1	360-26	898-1	360-26	898-1	360-268	398-1	360-26	898-1
Frac	Method	Analyte	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	110	)	510		100	U	220		210		130	
F	SW6010	Chromium	ug/l	19		170		5	U	130		120		83	
F	SW6010	Sodium	ug/l	130000	J	170000		81000		160000		160000		150000	
N	E300	Chloride	mg/l	220	)	220		160		240		240		230	
N	E300	Nitrate as N	mg/l	0.76	3	0.94		1.2		2.4		2.4		3.3	
N	E300	Nitrite as N	mg/l	0.01	U	0.01	U	0.01	U	0.01	J	0.1 L	J	0.01	U
N	E300	Sulfate	mg/l	80	)	450		46		320		310		210	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	14	1	72		3.1		40		43		33	
N	SM2510B	LAB SPECIFIC CONDUCTANCE	umhos/cm	940	)	1700		700		1500		1500		1300	
Т	SW6010	Aluminum	ug/l	130	)	3900		91	J	5300		4800		2600	
Т	SW6010	Chromium	ug/l	20	)	810		5	U	1200		1100		630	
Т	SW6010	Sodium	ug/l	110000	) J	160000		77000		160000		160000		140000	

### Notes:

N = normal

T = total (unfiltered)

F = filtered

FS = field sample

FD = field duplicate

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

## Table 2

## Final Results Summary - 360-26874 & 360-26898 February 2010 Slurry Wall / Cap Groundwater and Surface Water **Olin Chemical Superfund Site** Wilmington, Massachusetts

			Loc Name	PZ-1	8R	SD-	17	
		Fi	eld Sample ID	OC-SW-P2	Z-18R-0.2	OC-SW-S	D-17-0.2	
		Field	d Sample Date	02/18	3/10	02/18/10		
			QC Code	FS	3	FS	3	
		Lab Sample D	elivery Group	360-26	898-1	360-26898-1		
Frac	Method	Analyte	Units	Result	Qual	Result	Qual	
=	SW6010	Aluminum	ug/l	120		150		
=	SW6010	Chromium	ug/l	20		60		
=	SW6010	Sodium	ug/l	130000		150000	J	
N	E300	Chloride	mg/l	220		240		
N	E300	Nitrate as N	mg/l	0.69		3.6		
V	E300	Nitrite as N	mg/l	0.01	U	0.1	U	
V	E300	Sulfate	mg/l	86		200		
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	16		48		
N	SM2510B	LAB SPECIFIC CONDUCTANCE	umhos/cm	950		1300		
Т	SW6010	Aluminum	ug/l	140		4600		
Т	SW6010	Chromium	ug/l	22		840		
Т	SW6010	Sodium	ug/l	120000		130000	J	

KJC 06/24/10

TLC 06/24/10

Prepared by / Date:

Checked by / Date:

Notes:

N = normal

T = total (unfiltered)

F = filtered

FS = field sample

FD = field duplicate

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

## Table 3

## Validation Qualification Action Summary - 360-26874 & 360-26898

## **Data Validation Report**

## February 2010 Slurry Wall / Cap Groundwater and Surface Water

## Olin Chemical Superfund Site Wilmington, Massachusetts

SDG	Lab Sample ID	Analytical Method	Field Sample ID	Parameter	Lab Result	Lab Qualifier	Final Result	Final Qualifier	Val Reason Code	Units
360-26898-1	360-26898-6	SW6010	OC-SW-SD-17-0.2	Sodium	150000		150000	J	TD	ug/l
360-26898-1	360-26898-6	SW6010	OC-SW-SD-17-0.2	Sodium	130000		130000	J	TD	ug/l
360-26898-1	360-26898-8	SW6010	OC-SW-ISCO-1-0.2	Sodium	130000		130000	J	TD	ug/l
360-26898-1	360-26898-8	SW6010	OC-SW-ISCO-1-0.2	Sodium	110000		110000	J	TD	ug/l

J - Value is estimated

TD - Dissolved concentration exceeds total

ug/L - microgram per liter

Prepared by / Date: KJC 06/24/10

Checked by / Date:

TLC 06/24/10

## FILE COPY



## ANALYTICAL REPORT

CHECKED FOR COMPLETENESS
OF PARAMETERS ORDERED BY:

G-29-/0

Job Number: 360-26874-1

Job Description: Quarterly Groundwater

For:
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, TN 37312-4441

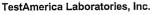
Attention: Mr. Steven Morrow

Joseph a. Chem. L.

Approved for release.
Joe Chimi
Report Production Representativ
3/2/10 3:04 PM

Designee for
Becky C Mason
Project Manager II
becky.mason@testamericainc.com
03/02/2010

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NH DES 2539, NELAP FL E87912 TOX, NELAP NJ MA008 TOX, NELAP NY 10843, NY ELAP 10843, North Carolina 647, NELAP PA 68-04386. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.



TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085 Tel (413) 572-4000 Fax (413) 572-3707 <a href="https://www.testamericainc.com">www.testamericainc.com</a>



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Project Loc	Name:	TestAmeric	a Westfield		Proj	ect #:	360-	26874	-1
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		cations for the fo	ollowing data se	et:[list Laboratory	/ Sample ID Nur	nber(s)]			
60-26874-	-8								
ample Ma	ntrices:	Groundwater	Soil/S	Sediment	Drinking Wate	r Othe	er:		
ICP SW-	846	8260B( <b>x</b> )	8151A ( )	8330 ( )	6010B ( )	7470A/1A	( )	Othe	r ( )
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	A respons	se to question	s E and F belo	w is required fo	or "Presumptive	e Certainty	" statu	s	
Е	Were all QC p	erformance sta	ndards and red	commendations	for the		Yes		No <sup>1</sup>
_	specified meth	nods achieved?					$\checkmark$		
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F	Were results t method(s) rep	•	st compounds/e	elements for the	specified		Yes	N/A	No¹ √
F		•	st compounds/e	elements for the	specified		Yes	N/A	1
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Laboratory	y Name:	TestAmeric	ca Westfield		Pro	ject #:	360-26874-1				
Project Lo	cation:				MADEP	RTN <sup>1</sup> :					
		cations for the f	ollowing data set	:[list Laborator	y Sample ID Nur	mber(s)]					
360-26874	<b>1-8</b>										
Sample M	atrices:	Groundwater	Soil/Se	ediment	Drinking Wate	er Othe	er:				
MCP SW	-846	8260B( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A	( )	Othe	r ( )		
Methods	Used	8270C( x )	8081A ( )	VPH()	6020 ( )	9014M <sup>2</sup> /9	. ,				
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Α			the laboratory in of-Custody docur				Yes √		No <sup>1</sup>		
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	standards or g		a that did not me	et appropriate	performance						
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D	significant mo	difications (see	Section 11.3 of	respective Me	thods)?			٧			
	A respons	se to question	s E and F below	/ is required f	or "Presumptiv	e Certainty	" statu:	<b>S</b>			
E			andards and reco				Yes		No <sup>1</sup>		
		nods achieved?							$\checkmark$		
F	Were results f	for all analyte-lis	st compounds/ele	ements for the	specified		Yes	N/A	No <sup>1</sup>		
	method(s) rep	orted?							$\checkmark$		
	<sup>1</sup> All Negative i	responses mus	t be addressed ir	n an attached l	Environmental La	aboratory c	ase narr	ative.			
, the und	ersigned, attes	st under the pa	ins and penalti	es of perjury	that, based upo	n my pers	onal				
nquiry of	those respons	sible for obtain	ning the informa	ation, the mat	erial contained	in this					
analytical	report is, to th	ne best of my l	knowledge and	belief, accura	te and complet	е.					
	0'	1-	7/-		<b>D</b>	1 -1	D:	_4			
	Signature:	20	tarling		Position	: Laborato	ry Dire	ctor			
	Printed Name:	Steven C. Ha	artmann		Date		3/2/10	14:56			
	form has been electronica				CAM VII	A, Rev 3.2		A	oril-04		
		MADEP MA014	NELAP FL E87912 TOX		TestAmerica Westfield	<del></del>					
Test <sub>A</sub>	merica	NY DOH 10843	NELAP NJ MA008 TOX		53 Southampton Rd,						
	Merica ENVIRONMENTAL TESTING	NY DOH 10843 RI DOH 57 CT DPH 0494	NELAP NJ MA008 TOX NELAP NY 10843 NH DES 253901-A	OLEO IN ACCORDANO	53 Southampton Rd, Westfield, MA 01085 Tel:(413)572-4000						

_aboratory	Name:	TestAmeri	ca Westfield		Proj	ect #:	360-	26874	-1
Project Lo	cation:				MADEP I	RTN <sup>1</sup> :			
his form	orovides certific	cations for the	following data se	t:[list Laboratory	Sample ID Nur	nber(s)]			
860-26874	-8								
Sample M	atrices:	Groundwate		ediment	Drinking Wate				
MCP SW		8260B( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A (		Othe	r ( )
Methods	ed in MADEP	8270C( ) 8082 ( )	8081A ( ) 8021B ( )	VPH (x)	6020 ( ) 7000 S <sup>3</sup> ( )	9014M <sup>2</sup> /90 7196A ( )	12()		
Compendi			e Tracking Num	. ,	` ,	7100/1( )			
Analytical			6 Method 9014 o	, , ,		able Cyanide	e (PAC	) Metho	d
check all	that apply)	3 S - SW-84	6 Methods 7000	Series List indiv	ridual method a	nd analyte.			
An aff	rmative respo	nse to questi	ons A, B, C and	D is required for	or "Presumptiv	e Certainty	/" statı	ıs	
Α	Were all samp	oles received b	y the laboratory	in a condition co	nsistent with		Yes		No <sup>1</sup>
	that described	I on the Chain-	of-Custody docu	mentation for the	e data set?		$\checkmark$		
	Were all QA/C	QC procedures	required for the	specified analyti	cal method(s)		Yes		No <sup>1</sup>
В	included in this	s report followe	ed, including the	requirement to r	ote and		$\sqrt{}$		
			ta that did not m	eet appropriate p	performance				
	standards or g	guidelines?							
	Does the analy	ytical data incl	uded in this repo	rt meet all the re	quirements		Yes	N/A	No <sup>1</sup>
С	1	-	as described in S			f	$\sqrt{}$		
			VII A, " Quality A		•				
	Control Guide	lines for the Ac	equisition and Re	porting of Analy	tical Data"?				
			<u>y</u> : Was the VPH			out	Yes	N/A	No <sup>1</sup>
D	significant mo	difications (see	e Section 11.3 of	respective Meth	nods)?		V		
	A respons	se to questior	ns E and F below	w is required fo	r "Presumptive	e Certainty	" statu	s	
E			andards and rec				Yes		No <sup>1</sup>
		nods achieved							
F	Were results f	or all analyte-li	st compounds/e	lements for the s	specified		Yes	N/A	No <sup>1</sup>
	method(s) rep	orted?					$\checkmark$		
	1 4 11 4 1								
			st be addressed					ative.	
	_	-	ains and penalt ning the inform				onai		
	-		knowledge and						
<u>,                                     </u>			. /	,		_			
	Signature:	St	Hartin		Position:	Laborato	y Dire	ctor	
	Printed Name:	Steven C. H	artmann		Date:		3/2/10	14:56	
	orm has been electronica	-				A, Rev 3.2			pril-04
95	9	MADEP MA014	NELAP FL E87912 TOX		TestAmerica Westfield	 !			
<b>TestA</b>	merica	NY DOH 10843	NELAP NJ MA008 TOX		53 Southampton Rd,				
	NVIRONMENTAL TESTING	RI DOH 57 CT DPH 0494	NELAP NY 10843 NH DES 253901-A	SIGN IN ACCORDANCE	Westfield, MA 01085 Tel:(413)572-4000				

Laboratory	y Name:	TestAmeric	a Westfield		Proj	ect #:	360-	26874	-1
Project Lo	cation:				MADEP I	RTN <sup>1</sup> :			
		cations for the fo	ollowing data set	[list Laborator	ry Sample ID Nur	nber(s)]			
360-26874	<b>1-(1-8)</b>								
Sample M	atrices:	Groundwater	Soil/Se	diment	Drinking Wate	r Othe	r:		
MCP SW	-846	8260B( )	8151A ( )	8330 ( )	6010B (x)	7470A/1A (	)	Othe	r ( )
Methods	Used	8270C( )	8081A ( )	VPH()	6020 ()	9014M <sup>2</sup> /90	)12 ( )		
	ed in MADEP	8082 ( )	8021B ( )	EPH()	7000 S <sup>3</sup> ( )	7196A ( )			
Compendi			e Tracking Numb	, ,		bla Cuanida	· (DAC)	Matha	٦
•	Methods. that apply)			-	siologically Availa lividual method a	-	e (PAC)	ivietno	u
							ı" ototu		
					for "Presumptiv	e Certainty		15	1
Α		•	the laboratory in of-Custody document				Yes √		No <sup>1</sup>
			•						
_		•	required for the s		, ,		Yes		No <sup>1</sup>
В		-	d, including the r	•			٧		
	standards or		a that did not me	et appropriate	performance				
	standards or §	guideli les :							
		-	ded in this report		•		Yes	N/A	No <sup>1</sup>
С		•		• •	(b), (c) and (d) o	f	$\sqrt{}$		
			VII A, " Quality As		•				
	Control Guide	lines for the Ac	quisition and Rep	orting of Anai	yticai Data"?				
		-			d conducted with	out	Yes	N/A	No <sup>1</sup>
D	significant mo	difications (see	Section 11.3 of	espective Me	thods)?			V	
	A respon	se to auestion	s F and F helow	is required f	or "Presumptive	Certainty	" etatu	-	
						Certainty		<u> </u>	No <sup>1</sup>
E		berrormance sta hods achieved?	indards and reco	mmendations	for the		Yes √		NO
F			st compounds/ele	monte for the	cooified		Yes	N/A	No <sup>1</sup>
	method(s) rep	-	st compounds/ele		specified		163	11/71	\ √
	mounou(o) rop	ontou.							•
	<sup>1</sup> All Negative	resnonses mus	t he addressed in	an attached	Environmental La	horatory ca	se narr	ative	
the und					that, based upo			auvo.	
	_	-	-		triat, based upo		niai		
	-		_		ite and complete				
	•				-				
	Signature:	STA	Hatra		Position:	Laborato	y Dire	ctor	
		Stavan C Ha	artmann		Date:		3/2/10	14:56	
	Printed Name:	. טנפעפוו ט. ו יי			_				
	Printed Name:				CAM VII	A, Rev 3.2		Ar	oril-04
		ally signed and approved.				A, Rev 3.2		Αţ	oril-04
The certification	form has been electronic				CAM VII  TestAmerica Westfield 53 Southampton Rd,			Αţ	oril-04
TestA	form has been electronic	ally signed and approved.  MADEP MA014	NELAP FL E87912 TOX	0 M ACCO 80.	TestAmerica Westfield			Аţ	oril-04

_aboratory	/ Name:	TestAmeri	ca Westfield		Proj	ject #:	360-	26874	-1
Project Lo	cation:				MADEP I	RTN <sup>1</sup> :			
		cations for the	following data se	et:[list Laboratory	Sample ID Nur	mber(s)]			
860-26874	1-(1-8)								
Sample M	atrices:	Groundwate	r Soil/S	Sediment	Drinking Wate	r Other	:		
MCP SW		8260B( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A (		Other	( <b>x</b> )
Methods		8270C( )	8081A ( )	VPH()	6020 ()	9014M <sup>2</sup> /90	12 ( )		
As specifie Compendi	ed in MADEP	8082 ( )	8021B ( )	EPH ( )	7000 S <sup>3</sup> ( )	7196A ( )			
Analytical			•	or MADEP Physi		able Cvanide	(PAC	) Metho	d
•	that apply)			Series List indiv			(1710)	) Wictilo	u
An aff	irmative respo	nse to questi	ons A. B. C and	I D is required f	or "Presumptiv	/e Certainty	===== " statı	us	
Α				in a condition co			Yes		No <sup>1</sup>
-	1		•	mentation for th			√ √		140
	Were all OA/	C procedures	required for the	specified analyt	ical mothod(s)		Yes		No <sup>1</sup>
В		•	•	requirement to r	, ,		ves		INU
_		-	_	eet appropriate			,		
	standards or g				•				
	Does the anal	lytical data incli	uded in this reno	ort meet all the re	aquirements		Yes	N/A	No <sup>1</sup>
С		•	•	Section 2.0 (a), (	•	of	103	\ √	140
		•		Assurance and C		,		,	
			•	eporting of Analy	•				
	VPH and EPH	l methods on	l <b>v:</b> Was the VPF	or EPH Method	I conducted with	nout	Yes	N/A	No <sup>1</sup>
D			<del>-</del>	f respective Meth		loat	100	√ ·	
		•		•	,				
	A respon	se to questior	ns E and F belo	w is required fo	or "Presumptive	e Certainty"	statu	s	
E	Were all QC p	erformance st	andards and rec	commendations f	or the		Yes		No <sup>1</sup>
		hods achieved					$\sqrt{}$		
F	Were results f	for all analyte-li	ist compounds/e	lements for the	specified		Yes	N/A	No <sup>1</sup>
	method(s) rep	orted?						$\checkmark$	
	<sup>1</sup> All Negative	responses mus	st be addressed	in an attached E	nvironmental La	aboratory ca	se nar	rative.	
, the und	ersigned, attes	st under the p	ains and penal	ties of perjury t	hat, based upo	n my perso	nal		
	-		_	nation, the mate					
analytical	report is, to the	ne best of my	knowledge and	l belief, accurat	e and complete	e			
	Signature:	Sta	Hatu	•	Position:	: Laborator	y Dire	ctor	
	Printed Name:	Steven C. H	artmann		Date:	<u>.</u>	3/2/10	14:56	
					_	A, Rev 3.2	<u>-, -, 10</u>		pril-04
	form has been electronics	ally Signed and anniover			OAW VII	,			0-7
	form has been electronica			<b>(</b>	TestAmerica Westfield	1			
The certification f	•	MADEP MA014 NY DOH 10843	NELAP FL E87912 TOX		TestAmerica Westfield	i			
TestA	•	MADEP MA014	NELAP FL E87912 TO			1			

## **CASE NARRATIVE**

**Client: Olin Corporation** 

**Project: Quarterly Groundwater** 

Report Number: 360-26874-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

### **RECEIPT**

The samples were received on 02/17/2010; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 1.6 and 0.6 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2 C of the required temperature or method specified range. For samples with a specified temperature of 4 C, samples with a temperature ranging from just above freezing temperature of water to 6 C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

## **VOLATILE ORGANIC COMPOUNDS (GC-MS)**

Sample 360-26874-8 was analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The sample was analyzed on 02/19/2010.

Sample 360-26874-8(25X) required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

The LCS was used as the CCV.

At the request of the client, a non-MCP analyte list was reported for this job.

No difficulties were encountered during the volatiles analysis.

All quality control parameters were within the acceptance limits.

## SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample 360-26874-8 was analyzed for semivolatile organic compounds (GC-MS) in accordance with EPA SW-846 8270C LL. The sample was prepared on 02/23/2010 and analyzed on 03/02/2010.

Phenol-d5 failed the surrogate recovery criteria low for 360-26874-8, LCS 360-55338/2-A and LCSD 360-55338/3-A. Refer to the QC report for details. In all cases, the recovery of Phenol-d5 was at or above 10%. Per method SOP, re-extraction is only required if two or more surrogates from any one fraction fail or any single surrogate falls below 10%.

Bis(2-ethylhexyl) phthalate was detected in method blank MB 360-55338/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

At the request of the client, an abbreviated MCP analyte list was reported for this job.

No other difficulties were encountered during the semivolatiles analysis.

All other quality control parameters were within the acceptance limits.

## **VOLATILE PETROLEUM HYDROCARBONS**

Sample 360-26874-8 was analyzed for Volatile Petroleum Hydrocarbons in accordance with MADEP VPH. The sample was analyzed on 02/19/2010.

Sample 360-26874-8(4X) required dilution prior to analysis due to foaming. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the VPH analysis.

All quality control parameters were within the acceptance limits.

## **DISSOLVED METALS**

Samples 360-26874-1 through 360-26874-8 were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 02/19/2010.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the dissolved metals analyses.

All quality control parameters were within the acceptance limits.

## **ANIONS**

Samples 360-26874-1 through 360-26874-7 were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 02/18/2010 and 02/19/2010.

Samples 360-26874-1(10X), 360-26874-3 through 360-26874-5(10X), 360-26874-5(50X), 360-26874-6(10X), 360-26874-6(50X) and 360-26874-7(10X) required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

## **AMMONIA**

Samples 360-26874-1 through 360-26874-8 were analyzed for ammonia in accordance with LACHAT 107-06-1B. The samples were prepared and analyzed on 02/22/2010.

Samples 360-26874-1 through 360-26874-4(10X), 360-26874-5(20X), 360-26874-6(20X) and 360-26874-7(10X) required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

## SPECIFIC CONDUCTANCE

Samples 360-26874-1 through 360-26874-7 were analyzed for specific conductance in accordance with SM 2510B. The samples were analyzed on 02/18/2010.

No difficulties were encountered during the specific conductance analyses.

All quality control parameters were within the acceptance limits.

### <u>PH</u>

Sample 360-26874-8 was analyzed for pH in accordance with SM 4500 H+. The sample was analyzed on 02/18/2010.

No difficulties were encountered during the pH analysis.

All quality control parameters were within the acceptance limits.

## **EXECUTIVE SUMMARY - Detections**

Client: Olin Corporation Job Number: 360-26874-1

Lab Sample ID Cl Analyte	lient Sample ID	Result / Q	ualifier	Reporting Limit	Units	Method
360-26874-1	OC-PZ-17RR					
Sulfate		470		20	mg/L	300.0
Chloride		19		1.0	mg/L	300.0
Ammonia		57		1.0	mg/L	L107-06-1B
Specific Conductance		1400		1.0	umhos/cm	SM 2510B
Dissolved						
Chromium		3.1	J	5.0	ug/L	6010B
360-26874-2	OC-GW-25					
Sulfate		100		2.0	mg/L	300.0
Chloride		41		1.0	mg/L	300.0
Ammonia		38		1.0	mg/L	L107-06-1B
Specific Conductance		570		1.0	umhos/cm	SM 2510B
Dissolved						
Chromium		2.6	J	5.0	ug/L	6010B
360-26874-3	OC-GW-202S					
Sulfate		400		20	mg/L	300.0
Chloride		44		1.0	mg/L	300.0
Ammonia		69		1.0	mg/L	L107-06-1B
Specific Conductance		1200		1.0	umhos/cm	SM 2510B
Dissolved						
Chromium		4.2	J	5.0	ug/L	6010B
360-26874-4	OC-GW-202S-DUP					
Sulfate		410		20	mg/L	300.0
Chloride		410		1.0	mg/L	300.0
Ammonia		69		1.0	mg/L	L107-06-1B
Specific Conductance		1200		1.0	umhos/cm	SM 2510B
Dissolved						
Chromium		4.2	J	5.0	ug/L	6010B
			•	5.0	~3	-0.02

## **EXECUTIVE SUMMARY - Detections**

Client: Olin Corporation Job Number: 360-26874-1

Lab Sample ID C	Client Sample ID	Result / Q	ualifier	Reporting Limit	Units	Method
360-26874-5	OC-GW-202D					
Sulfate		2300		100	mg/L	300.0
Chloride		320		10	mg/L	300.0
Ammonia		300		2.0	mg/L	L107-06-1B
Specific Conductance	!	4600		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		17000		100	ug/L	6010B
Chromium		1200		5.0	ug/L	6010B
360-26874-6	OC-GW-79S					
Sulfate		1500		100	mg/L	300.0
Chloride		200		10	mg/L	300.0
Ammonia		180		2.0	mg/L	L107-06-1B
Specific Conductance		3300		1.0	umhos/cm	SM 2510B
Dissolved						
Chromium		8.9		5.0	ug/L	6010B
		0.0		0.0	39/2	00.02
360-26874-7	OC-GW-78S					
Sulfate		530		20	mg/L	300.0
Chloride		21		1.0	mg/L	300.0
Ammonia		56		1.0	mg/L	L107-06-1B
Specific Conductance		1300		1.0	umhos/cm	SM 2510B
Dissolved						
Chromium		1.7	J	5.0	ug/L	6010B
360-26874-8	OC-GW-16R					
2,4,4-Trimethyl-1-pent	tene	1700		25	ug/L	8260B
2,4,4-Trimethyl-2-pent		490		25	ug/L	8260B
Bis(2-ethylhexyl) phth		0.81	JB	1.8	ug/L	8270C LL
C5-C8 Aliphatics (una		1800		200	ug/L	MAVPH
C5-C8 Aliphatics (adju	•	1800		200	ug/L	MAVPH
Total VPH	,	1800		200	ug/L	MAVPH
Ammonia		6.7		0.10	mg/L	L107-06-1B
рН		6.55	HF	0.100	รบั	SM 4500 H+ B
Dissolved						
Iron		1800		100	ug/L	6010B
				• •	- 3	

## **METHOD SUMMARY**

Client: Olin Corporation Job Number: 360-26874-1

Description	Lab Location	Method Preparation Method
Matrix Water		
Volatile Organic Compounds (Custom List) Purge and Trap	TAL WFD TAL WFD	SW846 8260B SW846 5030B
Semivolatile Organic Compounds by GCMS - Low Levels Liquid-Liquid Extraction (Separatory Funnel)	TAL WFD TAL WFD	SW846 8270C LL SW846 3510C
Massachusetts - Volatile Petroleum Hydrocarbons (GC) Purge and Trap	TAL WFD TAL WFD	MA DEP MAVPH SW846 5030B
Dissolved Metals Sample Filtration, Field	TAL WFD TAL WFD	SW846 6010B FIELD_FLTRD
Chloride & Sulfate	TAL WFD	40CFR136A 300.0
Nitrogen Ammonia Distillation, Ammonia	TAL WFD TAL WFD	LACHAT L107-06-1B Distill/Ammonia
Conductivity, Specific Conductance	TAL WFD	SM SM 2510B
рН	TAL WFD	SM SM 4500 H+ B

## Lab References:

TAL WFD = TestAmerica Westfield

## **Method References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

MA DEP = Massachusetts Department Of Environmental Protection

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Olin Corporation Job Number: 360-26874-1

Method	Analyst	Analyst ID
SW846 8260B	Tester, Carla	СТ
SW846 8270C LL	Sullivan, Pat J	PJS
MA DEP MAVPH	Rouleau, Catherine M	CMR
SW846 6010B	Smith, Tim J	TJS
40CFR136A 300.0	Lalashius, Andrew L	ALL
LACHAT L107-06-1B	Lalashius, Andrew L	ALL
SM SM 2510B	Emerich, Rich W	RWE
SM SM 4500 H+ B	Emerich, Rich W	RWE

## **SAMPLE SUMMARY**

Client: Olin Corporation Job Number: 360-26874-1

			Date/Time	Date/Time
Lab Sample ID	Client Sample ID	Client Matrix	Sampled	Received
360-26874-1	OC-PZ-17RR	Water	02/15/2010 1420	02/17/2010 1640
360-26874-2	OC-GW-25	Water	02/15/2010 1435	02/17/2010 1640
360-26874-3	OC-GW-202S	Water	02/17/2010 0940	02/17/2010 1640
360-26874-4	OC-GW-202S-DUP	Water	02/17/2010 0940	02/17/2010 1640
360-26874-5	OC-GW-202D	Water	02/17/2010 1000	02/17/2010 1640
360-26874-6	OC-GW-79S	Water	02/17/2010 1120	02/17/2010 1640
360-26874-7	OC-GW-78S	Water	02/17/2010 1125	02/17/2010 1640
360-26874-8	OC-GW-16R	Water	02/17/2010 1355	02/17/2010 1640

## **SAMPLE RESULTS**

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-PZ-17RR

Lab Sample ID:

360-26874-1

Date Sampled:

02/15/2010 1420

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qual	ifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B			Date Ar	nalyzed: 02/1	9/2010 1113	
Aluminum	ND		ug/L	39	100	1.0
Chromium	3.1	J	ug/L	1.3	5.0	1.0

Mr. Steven Morrow

Olin Corporation

Job Number: 360-26874-1

3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-PZ-17RR

Lab Sample ID:

360-26874-1

Date Sampled:

02/15/2010 1420

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/18/2010 2351	
Chloride	19	mg/L	1.0	1.0	1.0
Method: 300.0		Date Anal	yzed:	02/19/2010 0007	
Sulfate	470	mg/L	20	20	10
Method: L107-06-1B		Date Anal	yzed:	02/22/2010 1151	
Prep Method: Distill/Ammonia		Date Prep	ared:	02/22/2010 0913	
Ammonia	57	mg/L	1.0	1.0	10
Method: SM 2510B		Date Anal	yzed:	02/18/2010 1004	
Specific Conductance	1400	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-25

Lab Sample ID:

360-26874-2

Date Sampled:

02/15/2010 1435

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qua	alifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B			Date Ar	alyzed: 02/1	9/2010 1125	
Aluminum	ND		ug/L	39	100	1.0
Chromium	2.6	J	ug/L	1.3	5.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-25

Lab Sample ID:

360-26874-2

Date Sampled:

02/15/2010 1435

Date Received: 02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/19/2010 0055	
Sulfate	100	mg/L	2.0	2.0	1.0
Chloride	41	mg/L	1.0	1.0	1.0
Method: L107-06-1B		Date Analyzed: 02/22/2010 1152		02/22/2010 1152	
Prep Method: Distill/Ammonia		Date Prep	ared:	02/22/2010 0913	
Ammonia	38	mg/L	1.0	1.0	10
Method: SM 2510B		Date Anal	yzed:	02/18/2010 1005	
Specific Conductance	570	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-202S

Lab Sample ID:

360-26874-3

Date Sampled:

02/17/2010 0940

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qua	alifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B			Date Ar	nalyzed: 02/	19/2010 1128	
Aluminum	ND		ug/L	39	100	1.0
Chromium	4.2	J	ug/L	1.3	5.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-202S

Lab Sample ID:

360-26874-3

Date Sampled:

02/17/2010 0940

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/19/2010 0126	
Chloride	44	mg/L	1.0	1.0	1.0
Method: 300.0		Date Analyzed: 02/19/2010 0141		02/19/2010 0141	
Sulfate	400	mg/L	20	20	10
Method: L107-06-1B		Date Anal	yzed:	02/22/2010 1153	
Prep Method: Distill/Ammonia		Date Prep	ared:	02/22/2010 0913	
Ammonia	69	mg/L	1.0	1.0	10
Method: SM 2510B		Date Analyzed: 02/18/2010		02/18/2010 1007	
Specific Conductance	1200	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-202S-DUP

Lab Sample ID:

360-26874-4

Date Sampled:

02/17/2010 0940

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualif	ier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B			Date Ar	nalyzed: 02/1	9/2010 1136	
Aluminum	ND		ug/L	39	100	1.0
Chromium	4.2	J	ug/L	1.3	5.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-202S-DUP

Lab Sample ID:

360-26874-4

Date Sampled:

02/17/2010 0940

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/19/2010 0156	
Chloride	44	mg/L	1.0	1.0	1.0
Method: 300.0		Date Analyzed: 02/19/2010 0211			
Sulfate	410	mg/L	20	20	10
Method: L107-06-1B		Date Analyzed: Date Prepared:		02/22/2010 1154	
Prep Method: Distill/Ammonia				02/22/2010 0913	
Ammonia	69	mg/L	1.0	1.0	- 10
Method: SM 2510B		Date Analyzed:		02/18/2010 1012	
Specific Conductance	1200	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441 Job Number: 360-26874-1

Client Sample ID:

OC-GW-202D

Lab Sample ID:

360-26874-5

Date Sampled:

02/17/2010 1000

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Analyzed: 02/19/2010 1139			
Aluminum	17000	ug/L	39	100	1.0
Chromium	1200	ug/L	1.3	5.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-202D

Lab Sample ID:

360-26874-5

Date Sampled:

02/17/2010 1000

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Analyzed:		02/19/2010 0312	
Chloride	320	mg/L	10	10	10
Method: 300.0	<u>5</u> )	Date Analyzed: 02/19/2010 2330			
Sulfate	2300	mg/L	100	100	50
Method: L107-06-1B		Date Analyzed:		02/22/2010 1155	
Prep Method: Distill/Ammonia		Date Prepared:		02/22/2010 0913	
Ammonia	300	mg/L	2.0	2.0	20
Method: SM 2510B		Date Analyzed:		02/18/2010 1014	
Specific Conductance	4600	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-79S

Lab Sample ID:

360-26874-6

Date Sampled:

02/17/2010 1120

Date Received:

02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		02/19/2010 1142			
Aluminum	ND	ug/L	39	100	1.0
Chromium	8.9	ug/L	1.3	5.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-79S

Lab Sample ID:

360-26874-6

Date Sampled:

02/17/2010 1120

Date Received: 02/17/2010 1640

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution	
Method: 300.0		Date Anal				
Chloride	200	mg/L	10	10	10	
Method: 300.0		Date Analyzed: 02/19/2010 2345				
Sulfate	1500	mg/L	100	100	50	
Method: L107-06-1B		Date Analyzed: 02/22/2010 1156				
Prep Method: Distill/Ammonia		Date Prepared:		02/22/2010 0913		
Ammonia	180	mg/L	2.0	2.0	20	
Method: SM 2510B		Date Analyzed:		02/18/2010 1015		
Specific Conductance	3300	umhos/cm	1.0	1.0	1.0	

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-78S

Lab Sample ID:

360-26874-7

Date Sampled:

02/17/2010 1125

Date Received: 02/17/2010 1640

Client Matrix:

Analyte	Result/Qua	alifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B	Date Ana		nalyzed: 02/19/2010 114			
Aluminum	ND		ug/L	39	100	1.0
Chromium	1.7	J	ug/L	1.3	5.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200

Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-78S

Lab Sample ID:

360-26874-7

Date Sampled:

02/17/2010 1125

Job Number: 360-26874-1

Date Received: 02/17/2010 1640

Client Matrix:

Water

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/19/2010 0357	
Chloride	21	mg/L	1.0	1.0	1.0
Method: 300.0		Date Anal	yzed:	02/19/2010 0413	
Sulfate	530	mg/L	20	20	10
Method: L107-06-1B		Date Anal	yzed:	02/22/2010 1157	
Prep Method: Distill/Ammonia		Date Prep	ared:	02/22/2010 0913	
Ammonia	56	mg/L	1.0	1.0	10
Method: SM 2510B		Date Anal	yzed:	02/18/2010 1017	
Specific Conductance	1300	umhos/cm	1.0	1.0	1.0

Job Number: 360-26874-1

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-16R

Lab Sample ID:

360-26874-8

Date Sampled:

02/17/2010 1355

Date Received:

02/17/2010 1640

Client Matrix:

Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 8260B		Date A	nalyzed:	02/19/2010 1911	
Prep Method: 5030B		Date F	repared:	02/19/2010 1911	
2,4,4-Trimethyl-1-pentene	1700	ug/L	20	25	25
2,4,4-Trimethyl-2-pentene	490	ug/L	12	25	25
Surrogate				Acceptance Limits	
4-Bromofluorobenzene	103	%		70 - 130	
Dibromofluoromethane	- 125	%		70 - 130	
Toluene-d8 (Surr)	100	%		70 - 130	
Method: 8270C LL		Date A	analyzed:	03/02/2010 0620	
Prep Method: 3510C		Date F	Prepared:	02/23/2010 1148	
Bis(2-ethylhexyl) phthalate	-0.81- ND -	JB ug/L	0.45	1.8	1.0
N-Nitrosodiphenylamine	ND	ug/L	0.45	4.5	1.0
Surrogate				Acceptance Limits	
2,4,6-Tribromophenol	91	%		15 - 110	
2-Fluorobiphenyl	77	%		30 - 130	
2-Fluorophenol	24	%		15 - 110	
Nitrobenzene-d5	91	%		30 - 130	
Phenol-d5	13	X %		15 - 110	
Terphenyl-d14	88	%		30 - 130	
Method: Dissolved-6010B		Date A	Analyzed:	02/19/2010 1148	
Iron	1800	ug/L	34	100	1.0

Job Number: 360-26874-1

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-GW-16R

Lab Sample ID:

360-26874-8

Date Sampled:

02/17/2010 1355

Date Received:

02/17/2010 1640

Client Matrix:

Water

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: MAVPH		Date Ar	nalyzed:	02/19/2010 0224	
Prep Method: 5030B		Date Pr	epared:	02/19/2010 0224	
Benzene	ND	ug/L	4.0	4.0	4.0
Ethylbenzene	ND	ug/L	4.0	4.0	4.0
m-Xylene & p-Xylene	ND	ug/L	8.0	8.0	4.0
Methyl tert-butyl ether	ND	ug/L	4.0	4.0	4.0
Naphthalene	ND	ug/L	20	20	4.0
o-Xylene	ND	ug/L	4.0	4.0	4.0
Toluene	ND	ug/L	4.0	4.0	4.0
C5-C8 Aliphatics (unadjusted)	1800	ug/L	200	200	4.0
C9-C12 Aliphatics (unadjusted)	ND	ug/L	200	200	4.0
C5-C8 Aliphatics (adjusted)	1800	ug/L	200	200	4.0
C9-C12 Aliphatics (adjusted)	ND	ug/L	200	200	4.0
C9-C10 Aromatics	ND	ug/L	200	200	4.0
Total VPH	1800	ug/L	200	200	4.0
Surrogate				Acceptance Limits	
2,5-Dibromotoluene (fid)	95	%		70 - 130	
2,5-Dibromotoluene (pid)	87	%		70 - 130	
Method: L107-06-1B		Date Analyzed:		02/22/2010 1146	
Prep Method: Distill/Ammonia		Date Pr	repared:	02/22/2010 0913	
Ammonia	6.7	mg/L	0.10	0.10	1.0
Method: SM 4500 H+ B		Date A	nalyzed:	02/18/2010 1037	
рН	6.55 T HF	SU	0.10	0.100	1.0

#### **DATA REPORTING QUALIFIERS**

Client: Olin Corporation Job Number: 360-26874-1

Lab Section	Qualifier	Description
GC/MS Semi VOA		
	В	Compound was found in the blank and sample.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
	X	Surrogate exceeds the control limits
Metals		
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
General Chemistry		
	HF	Field parameter with a holding time of 15 minutes

### **QUALITY CONTROL RESULTS**

#### **QC Association Summary**

Lab Carrella ID	Olfred Orangle ID	Report Basis	Olivert Market	NA - 41 d	Bass Batali
Lab Sample ID	Client Sample ID	Dasis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:360-55272					
LCS 360-55272/3	Lab Control Sample	T	Water	8260B	
LCSD 360-55272/4	Lab Control Sample Duplicate	Т	Water	8260B	
MB 360-55272/6	Method Blank	Т	Water	8260B	
360-26874-8	OC-GW-16R	Т	Water	8260B	
Report Basis T = Total					
GC/MS Semi VOA					
Prep Batch: 360-55338					
LCS 360-55338/2-A	Lab Control Sample	Т	Water	3510C	
LCSD 360-55338/3-A	Lab Control Sample Duplicate	Т	Water	3510C	
MB 360-55338/1-A	Method Blank	Т	Water	3510C	
360-26874-8	OC-GW-16R	Т	Water	3510C	
Analysis Batch:360-55513					
LCS 360-55338/2-A	Lab Control Sample	Т	Water	8270C LL	360-55338
LCSD 360-55338/3-A	Lab Control Sample Duplicate	Т	Water	8270C LL	360-55338
MB 360-55338/1-A	Method Blank	Т	Water	8270C LL	360-55338
360-26874-8	OC-GW-16R	Т	Water	8270C LL	360-55338
Report Basis					
T = Total					
GC VOA					
Analysis Batch:360-55210		-	<b>NA</b> / /	144) (D: :	
LCS 360-55210/3	Lab Control Sample	T 	Water	MAVPH	
LCSD 360-55210/4	Lab Control Sample Duplicate	T	Water	MAVPH	
MB 360-55210/6	Method Blank	T	Water	MAVPH	
360-26874-8	OC-GW-16R	Т	Water	MAVPH	

#### Report Basis

T = Total

#### **QC Association Summary**

Report Basis **Client Matrix** Lab Sample ID Client Sample ID Method Prep Batch Metals Analysis Batch:360-55244 6010B LCS 360-55244/13 Lab Control Sample Τ Water Lab Control Sample Duplicate Т Water 6010B LCSD 360-55244/25 Т Water 6010B MB 360-55244/14 Method Blank 360-26874-1 OC-PZ-17RR D Water 6010B 360-26874-1DU Duplicate D Water 6010B D Water 360-26874-1MS Matrix Spike 6010B D Water 360-26874-2 OC-GW-25 6010B 360-26874-3 OC-GW-202S D Water 6010B D 360-26874-4 OC-GW-202S-DUP Water 6010B 360-26874-5 OC-GW-202D D Water 6010B D Water 360-26874-6 OC-GW-79S 6010B D Water 6010B 360-26874-7 OC-GW-78S 360-26874-8 OC-GW-16R D Water 6010B

#### Report Basis

D = Dissolved

T = Total

#### **QC Association Summary**

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry	·				·
Analysis Batch:360-55	177				
LCS 360-55177/1	Lab Control Sample	Т	Water	SM 2510B	
MB 360-55177/4	Method Blank	Ť	Water	SM 2510B	
360-26874-1	OC-PZ-17RR	T	Water	SM 2510B	
360-26874-2	OC-GW-25	T	Water	SM 2510B	
360-26874-3	OC-GW-202S	Ť	Water	SM 2510B	
360-26874-4	OC-GW-202S-DUP	Т	Water	SM 2510B	
360-26874-5	OC-GW-202D	T	Water	SM 2510B	
360-26874-6	OC-GW-79S	Т	Water	SM 2510B	
360-26874-7	OC-GW-78S	T	Water	SM 2510B	
Analysis Batch:360-55	179				
LCS 360-55179/2	Lab Control Sample	Т	Water	SM 4500 H+ B	
360-26874-8	OC-GW-16R	Т	Water	SM 4500 H+ B	
Analysis Batch:360-55	231				
LCS 360-55231/4	Lab Control Sample	Т	Water	300.0	
MB 360-55231/3	Method Blank	Т	Water	300.0	
360-26874-1	OC-PZ-17RR	Т	Water	300.0	
360-26874-1MS	Matrix Spike	Т	Water	300.0	
360-26874-1MSD	Matrix Spike Duplicate	Т	Water	300.0	
360-26874-2	OC-GW-25	Т	Water	300.0	
360-26874-3	OC-GW-202S	Т	Water	300.0	
360-26874-4	OC-GW-202S-DUP	Т	Water	300.0	
360-26874-5	OC-GW-202D	Т	Water	300.0	
360-26874-6	OC-GW-79S	Т	Water	300.0	
360-26874-7	OC-GW-78S	T	Water	300.0	
Analysis Batch:360-55	283				
LCS 360-55283/4	Lab Control Sample	Т	Water	300.0	
MB 360-55283/3	Method Blank	Т	Water	300.0	
360-26874-5	OC-GW-202D	Т	Water	300.0	
360-26874-6	OC-GW-79S	Т	Water	300.0	
Prep Batch: 360-55290		_			
LCS 360-55290/2-A	Lab Control Sample	T	Water	Distill/Ammonia	
MB 360-55290/1-A	Method Blank	T	Water	Distill/Ammonia	
360-26874-1	OC-PZ-17RR	Т	Water	Distill/Ammonia	
360-26874-2	OC-GW-25	Т	Water	Distill/Ammonia	
360-26874-3	OC-GW-202S	Т	Water	Distill/Ammonia	
360-26874-4	OC-GW-202S-DUP	Т	Water	Distill/Ammonia	
360-26874-5	OC-GW-202D	Т	Water	Distill/Ammonia	
360-26874-6	OC-GW-79S	Т	Water	Distill/Ammonia	
360-26874-7	OC-GW-78S	Т	Water	Distill/Ammonia	
360-26874-8	OC-GW-16R	T	Water	Distill/Ammonia	

360-55290

360-55290

Client: Olin Corporation Job Number: 360-26874-1

#### **QC Association Summary**

OC-GW-78S

OC-GW-16R

Report Basis **Client Matrix** Lab Sample ID Client Sample ID Method **Prep Batch General Chemistry** Analysis Batch:360-55296 LCS 360-55290/2-A Lab Control Sample Τ Water L107-06-1B 360-55290 Water Т MB 360-55290/1-A Method Blank L107-06-1B 360-55290 Т OC-PZ-17RR L107-06-1B 360-26874-1 Water 360-55290 360-26874-2 OC-GW-25 Т Water L107-06-1B 360-55290 360-26874-3 OC-GW-202S Т Water L107-06-1B 360-55290 Т OC-GW-202S-DUP Water L107-06-1B 360-26874-4 360-55290 Т Water 360-26874-5 OC-GW-202D L107-06-1B 360-55290 Т 360-26874-6 OC-GW-79S Water L107-06-1B 360-55290

Т

Water

Water

L107-06-1B

L107-06-1B

Report Basis

360-26874-7

360-26874-8

T = Total

#### **Surrogate Recovery Report**

#### 8260B Volatile Organic Compounds (Custom List)

#### Client Matrix: Water

		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	%Rec	%Rec	%Rec
360-26874-8	OC-GW-16R	103	125	100
MB 360-55272/6		88	120	91
LCS 360-55272/3		105	104	102
LCSD 360-55272/4		102	102	102

Surrogate	Acceptance Limits
BFB = 4-Bromofluorobenzene	70-130
DBFM = Dibromofluoromethane	70-130
TOL = Toluene-d8 (Surr)	70-130

#### **Surrogate Recovery Report**

#### 8270C LL Semivolatile Organic Compounds by GCMS - Low Levels

#### Client Matrix: Water

		TBP	FBP	2FP	NBZ	PHL	TPH
Lab Sample ID	Client Sample ID	%Rec	%Rec	%Rec	%Rec	%Rec	%Rec
360-26874-8	OC-GW-16R	91	77	24	91	13X	88
MB 360-55338/1-A		83	77	28	90	17	87
LCS 360-55338/2-A		95	83	23	73	12X	93
LCSD 360-55338/3-A		98	79	23	73	12X	80

Surrogate	Acceptance Limits
TBP = 2,4,6-Tribromophenol	15-110
FBP = 2-Fluorobiphenyl	30-130
2FP = 2-Fluorophenol	15-110
NBZ = Nitrobenzene-d5	30-130
PHL = Phenol-d5	15-110
TPH = Terphenyl-d14	30-130

#### **Surrogate Recovery Report**

#### MAVPH Massachusetts - Volatile Petroleum Hydrocarbons (GC)

#### Client Matrix: Water

		25DBT2	25DBT1
Lab Sample ID	Client Sample ID	%Rec	%Rec
360-26874-8	OC-GW-16R	95	87
MB 360-55210/6		96	88
LCS 360-55210/3		99	76
LCSD 360-55210/4		97	75

Surrogate	Acceptance Limits
25DBT = 2,5-Dibromotoluene (fid)	70-130
25DBT = 2.5-Dibromotoluene (pid)	70-130

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55272 Method: 8260B

Preparation: 5030B

Lab Sample ID: MB 360-55272/6 Analysis Batch: 360-55272 Instrument ID: Agilent#2 GC/MS Client Matrix: Water Prep Batch: N/A Lab File ID: V09963.D

Dilution: 1.0 Units: ug/L Initial Weight/Volume: 5 mL

Date Analyzed: 02/19/2010 1724 Final Weight/Volume: 5 mL
Date Prepared: 02/19/2010 1724

Analyte	Result	Qual	MDL	RL			
2,4,4-Trimethyl-1-pentene	ND		0.81	1.0			
2,4,4-Trimethyl-2-pentene	ND		0.50	1.0			
Surrogate	% Rec	% Rec					
4-Bromofluorobenzene	88		70 - 130				
Dibromofluoromethane	120		70 - 130				
Toluene-d8 (Surr)	91		70 - 130				

Lab Control Sample/ Method: 8260B
Lab Control Sample Duplicate Recovery Report - Batch: 360-55272 Preparation: 5030B

LCS Lab Sample ID: LCS 360-55272/3 Analysis Batch: 360-55272 Instrument ID: Agilent#2 GC/MS

Client Matrix: Water Prep Batch: N/A Lab File ID: V09960.D

Dilution: 1.0 Units: ug/L Initial Weight/Volume: 5 mL

Date Applyaget: 02/19/2010, 1621

Date Analyzed: 02/19/2010 1621 Final Weight/Volume: 5 mL

Date Prepared: 02/19/2010 1621

LCSD Lab Sample ID: LCSD 360-55272/4 Analysis Batch: 360-55272 Instrument ID: Agilent#2 GC/MS

Client Matrix: Water Prep Batch: N/A Lab File ID: V09961.D

Dilution: 1.0 Units: ug/L Initial Weight/Volume: 5 mL

Date Analyzed: 02/19/2010 1642 Final Weight/Volume: 5 mL Date Prepared: 02/19/2010 1642

% Rec. LCS RPD LCS Qual LCSD Qual Analyte **LCSD** Limit RPD Limit 112 105 70 - 130 25 2,4,4-Trimethyl-1-pentene 6 70 - 130 25 2,4,4-Trimethyl-2-pentene 103 99 4 LCS % Rec LCSD % Rec Surrogate Acceptance Limits 105 4-Bromofluorobenzene 102 70 - 130 Dibromofluoromethane 104 102 70 - 130 Toluene-d8 (Surr) 102 102 70 - 130

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55338

Method: 8270C LL Preparation: 3510C

Lab Sample ID: MB 360-55338/1-A

Client Matrix: Water

Dilution: 1.0

Date Analyzed: 03/01/2010 2250 Date Prepared: 02/23/2010 1148 Analysis Batch: 360-55513 Prep Batch: 360-55338

Units: ug/L

Instrument ID: Inst. B Lab File ID: B11388.D

Initial Weight/Volume: 1000 mL Final Weight/Volume: 1.0 mL Injection Volume: 1 uL

Analyte	Result	Qual	MDL	RL
Bis(2-ethylhexyl) phthalate	0.699	J	0.50	2.0
N-Nitrosodiphenylamine	ND		0.50	5.0
Surrogate	% Rec		Acceptance Limits	
2,4,6-Tribromophenol	83		15 - 110	
2-Fluorobiphenyl	77		30 - 130	
2-Fluorophenol	28		15 - 110	
Nitrobenzene-d5	90		30 - 130	
Phenol-d5	17		15 - 110	
Terphenyl-d14	87		30 - 130	

Client: Olin Corporation Job Number: 360-26874-1

Lab Control Sample/ Method: 8270C LL Lab Control Sample Duplicate Recovery Report - Batch: 360-55338 Preparation: 3510C

LCS Lab Sample ID: LCS 360-55338/2-A

Client Matrix: Water

Dilution: 1.0

03/02/2010 0026 Date Analyzed: Date Prepared: 02/23/2010 1148

Analysis Batch: 360-55513 Prep Batch: 360-55338

Units: ug/L

Instrument ID: Inst. B Lab File ID: B11391.D

Initial Weight/Volume: 1000 mL

Final Weight/Volume: 1.0 mL Injection Volume: 1 uL

LCSD Lab Sample ID: LCSD 360-55338/3-A

Client Matrix: Dilution: 1.0

03/02/2010 0058 Date Analyzed: Date Prepared:

Water

02/23/2010 1148

Analysis Batch: 360-55513 Prep Batch: 360-55338

Units: ug/L

Instrument ID: Inst. B Lab File ID: B11392.D

Initial Weight/Volume: 1000 mL Final Weight/Volume: 1.0 mL Injection Volume: 1 uL

	9	<u> 6 Rec.</u>				
Analyte	LCS	LCSD	Limit	RPD	RPD Limit LCS Qual	LCSD Qual
Bis(2-ethylhexyl) phthalate	100	94	40 - 140	6	20	
N-Nitrosodiphenylamine	72	71	40 - 140	1	20	
Surrogate	L	CS % Rec	LCSD %	Rec	Acceptance Limits	
2,4,6-Tribromophenol	9	5	98		15 - 110	
2-Fluorobiphenyl	8	3	79		30 - 130	
2-Fluorophenol	2	3	23		15 - 110	
Nitrobenzene-d5	7	3	73		30 - 130	
Phenol-d5	1.	2 X	12	X	15 - 110	
Terphenyl-d14	9	3	80		30 - 130	

Job Number: 360-26874-1 Client: Olin Corporation

Method Blank - Batch: 360-55210

Method: MAVPH Preparation: 5030B

Lab Sample ID: MB 360-55210/6

Water 1.0

Dilution: Date Analyzed: 02/18/2010 1915

Client Matrix:

Date Prepared: 02/18/2010 1915

Analysis Batch: 360-55210

Prep Batch: N/A

Units: ug/L

Instrument ID: Inst. G Lab File ID: G19918.D Initial Weight/Volume: 5 mL Final Weight/Volume: 5 mL

Injection Volume:

Column ID: PRIMARY

Analyte	Result	Qual	RL	RL
Benzene	ND		1.0	1.0
Ethylbenzene	ND		1.0	1.0
m-Xylene & p-Xylene	ND		2.0	2.0
Methyl tert-butyl ether	ND		1.0	1.0
Naphthalene	ND		5.0	5.0
o-Xylene	ND		1.0	1.0
Toluene	ND		1.0	1.0
C5-C8 Aliphatics (unadjusted)	ND		50	50
C9-C12 Aliphatics (unadjusted)	ND		50	50
C5-C8 Aliphatics (adjusted)	ND		50	50
C9-C12 Aliphatics (adjusted)	ND		50	50
C9-C10 Aromatics	ND		50	50
Total VPH	ND		50	50
Surrogate	% Rec		Acceptance Limits	
2,5-Dibromotoluene (fid)	96		70 - 130	
2,5-Dibromotoluene (pid)	88		70 - 130	

Inst. G

Client: Olin Corporation Job Number: 360-26874-1

Lab Control Sample/ Method: MAVPH
Lab Control Sample Duplicate Recovery Report - Batch: 360-55210 Preparation: 5030B

LCS Lab Sample ID: LCS 360-55210/3 Analysis Batch: 360-55210 Instrument ID:

Client Matrix: Water Prep Batch: N/A Lab File ID: G19915.D

Dilution: 1.0 Units: ug/L Initial Weight/Volume: 5 mL

Date Analyzed: 02/18/2010 1735 Final Weight/Volume: 5 mL

Date Prepared: 02/18/2010 1735 Injection Volume:

Column ID: PRIMARY

LCSD Lab Sample ID: LCSD 360-55210/4 Analysis Batch: 360-55210 Instrument ID: Inst. G
Client Matrix: Water Prep Batch: N/A Lab File ID: G19916.D

Client Matrix: Water Prep Batch: N/A Lab File ID: G19916.D

Dilution: 1.0 Units: ug/L Initial Weight/Volume: 5 mL

Date Analyzed: 02/18/2010 1808 Final Weight/Volume: 5 mL

Date Prepared: 02/18/2010 1808 Injection Volume:

Column ID: PRIMARY

	-	<u>% Rec.</u>					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Benzene	99	99	70 - 130	1	25		
Ethylbenzene	99	100	70 - 130	1	25		
m-Xylene & p-Xylene	99	99	70 - 130	0	25		
Methyl tert-butyl ether	84	81	70 - 130	3	25		
Naphthalene	85	85	70 - 130	1	25		
o-Xylene	98	98	70 - 130	0	25		
Toluene	99	99	70 - 130	0	25		
C5-C8 Aliphatics (unadjusted)	100	100	70 - 130	0	25		
C9-C12 Aliphatics (unadjusted)	100	100	70 - 130	0	25		
C9-C10 Aromatics	92	92	70 - 130	0	25		
Surrogate	L	.CS % Rec	LCSD %	Rec	Accep		
2,5-Dibromotoluene (fid)	9	9	97		7	0 - 130	
2,5-Dibromotoluene (pid)	7	'6	75		7	0 - 130	

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55244 Method: 6010B

Preparation: N/A

Lab Sample ID: MB 360-55244/14 Analysis Batch: 360-55244 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1047 Final Weight/Volume: 1.0 mL Date Prepared: N/A

Analyte Result Qual MDL RL ND 39 100 Aluminum ND 34 100 Iron Chromium ND 1.3 5.0

Lab Control Sample/ Method: 6010B
Lab Control Sample Duplicate Recovery Report - Batch: 360-55244 Preparation: N/A

LCS Lab Sample ID: LCS 360-55244/13 Analysis Batch: 360-55244 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1044 Final Weight/Volume: 10 mL

Date Prepared: N/A

LCSD Lab Sample ID: LCSD 360-55244/25 Analysis Batch: 360-55244 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1130 Final Weight/Volume: 10 mL

Date Prepared: N/A

% Rec. LCS **RPD** Analyte LCSD Limit RPD Limit LCS Qual LCSD Qual Aluminum 99 91 80 - 120 9 20 99 80 - 120 8 20 Iron 92 Chromium 99 92 80 - 120 8 20

Client: Olin Corporation Job Number: 360-26874-1

Matrix Spike - Batch: 360-55244 Method: 6010B Preparation: N/A

Lab Sample ID: 360-26874-1 Analysis Batch: 360-55244 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1119 Final Weight/Volume: 10 mL

Date Prepared: N/A

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	ND	5000	4490	90	75 - 125	
Iron	390	5000	4770	88	75 - 125	
Chromium	3.1 J	1000	891	89	75 - 125	

Duplicate - Batch: 360-55244 Method: 6010B Preparation: N/A

Lab Sample ID: 360-26874-1 Analysis Batch: 360-55244 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1116 Final Weight/Volume: 1.0 mL Date Prepared: N/A

Sample Result/Qual **RPD** Qual Analyte Result Limit Aluminum ND ND NC 20 390 379 20 Iron 3 Chromium 3.1 J 2.86 9 20 J

1.0 mL

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55231 Method: 300.0

Preparation: N/A

Lab Sample ID: MB 360-55231/3 Analysis Batch: 360-55231 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/18/2010 2321 Final Weight/Volume: 1.0 mL Date Prepared: N/A

 Analyte
 Result
 Qual
 RL
 RL

 Sulfate
 ND
 2.0
 2.0

 Chloride
 ND
 1.0
 1.0

Lab Control Sample - Batch: 360-55231 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-55231/4 Analysis Batch: 360-55231 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

Date Analyzed: 02/18/2010 2336 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit Qual 85 - 115 Sulfate 0.08 81.1 101 Chloride 40.0 40.1 100 85 - 115

1.0 mL

Client: Olin Corporation Job Number: 360-26874-1

Matrix Spike/ Method: 300.0

Matrix Spike Duplicate Recovery Report - Batch: 360-55231 Preparation: N/A

MS Lab Sample ID: 360-26874-1 Analysis Batch: 360-55231 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 10 Initial Weight/Volume:

Date Analyzed: 02/19/2010 0022 Final Weight/Volume: 10 mL
Date Prepared: N/A

MSD Lab Sample ID: 360-26874-1 Analysis Batch: 360-55231 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 10 Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/19/2010 0040 Final Weight/Volume: 10 mL

N/A

Date Prepared:

	<u>% F</u>	Rec.					
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Sulfate	106	105	75 - 125	0	20		
Chloride	112	112	75 - 125	0	20		

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55283 Method: 300.0

Preparation: N/A

Lab Sample ID: Analysis Batch: 360-55283 MB 360-55283/3 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL

02/19/2010 1756 Date Analyzed: Final Weight/Volume: 1.0 mL Date Prepared: N/A

Analyte Result Qual RL RL Sulfate ND 2.0 2.0 Chloride ND 1.0 1.0

Lab Control Sample - Batch: 360-55283 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-55283/4 Analysis Batch: 360-55283 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

1.0 mL 02/19/2010 1811 Final Weight/Volume: Date Analyzed: 1.0 mL

Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit Qual 85 - 115 Sulfate 0.08 82.9 104 Chloride 40.0 40.4 101 85 - 115

1.0 mL

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55290 Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID: MB 360-55290/1-A Analysis Batch: 360-55296 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: 360-55290 Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

Date Analyzed: 02/22/2010 1128 Final Weight/Volume: 50 mL

Date Prepared: 02/22/2010 0913

Analyte Result Qual RL RL
Ammonia ND 0.10 0.10

Lab Control Sample - Batch: 360-55290 Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID: LCS 360-55290/2-A Analysis Batch: 360-55296 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: 360-55290 Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/22/2010 1129 Final Weight/Volume: 50 mL
Date Prepared: 02/22/2010 0913

Analyte Spike Amount Result % Rec. Limit Qual
Ammonia 10.0 9.72 97 85 - 115

Client: Olin Corporation Job Number: 360-26874-1

Method Blank - Batch: 360-55177 Method: SM 2510B

Preparation: N/A

Lab Sample ID: MB 360-55177/4 Analysis Batch: 360-55177 Instrument ID: Autotitrator

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: umhos/cm Initial Weight/Volume:

Date Analyzed: 02/18/2010 0950 Final Weight/Volume: 1.0 mL Date Prepared: N/A

Analyte Result Qual RL RL
Specific Conductance ND 1.0 1.0

Lab Control Sample - Batch: 360-55177 Method: SM 2510B Preparation: N/A

Lab Sample ID: LCS 360-55177/1 Analysis Batch: 360-55177 Instrument ID: Autotitrator Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: umhos/cm Initial Weight/Volume:

Date Analyzed: 02/18/2010 0930 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit Qual
Specific Conductance 1410 1390 98 85 - 115

Client: Olin Corporation Job Number: 360-26874-1

Lab Control Sample - Batch: 360-55179 Method: SM 4500 H+ B

Preparation: N/A

90 - 110

Lab Sample ID: LCS 360-55179/2 Analysis Batch: 360-55179 Instrument ID: Autotitrator

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: SU Initial Weight/Volume:

6.00

Date Analyzed: 02/18/2010 0940 Final Weight/Volume: 1.0 mL Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit Qual

5.920

99

рΗ

#### **VPH SAMPLE INFORMATION DATA**

#### **SAMPLE INFORMATION**

Sample II	D: <u>26874-8</u>		Batc	h#	55210	<u> </u>
Matrix	X Aqueous	Soil	Sediment	Oth	ner	
Containers	Satisfactory	Broken	Leaking:			
	Aqueous	□ N/A	x pH<2	☐ pH>2	2 Comment:	
	(acid Preserved)					
	Aqueous		☐ pH<11	☐ pH>1	11 Comment:	
	(TSP Preserved)					
Sample	Soil or	X N/A	Samples NOT	preserved in	Methanol or air-tight	g Soil/sediment/
Preservatives		container				mL Methanol
	Sediment	Samples i	rec'd in Methanol:	cove	ring soil/sediment	1:1 +/-25%
		not covering	g soil/sediment			
		☐ Samples re	ceived in air-tight c			Other:
Temperature		Received at	4°C ± 2°C	X Other:	1.6 & 0.6°C	



MADEP MA 014 RIDOH57 CTDPH 0494 VT DECWSD NH DES 253903-A

NELAP FL E87912 TOX NELAP NJ MA008 TOX NELAP NY 10843 NYDOH 10843



TestAmerica Westfield 53 Southampton Rd. Westfield, MA 01085 Tel:(413)572-4000 Fax:(413)572-3707

#### State Accreditation Matrix

State Accreditation Matrix												
		State where Primary Accreditation is Carried										
Made al Nessa	Description	New York (NELAC)	Mass	Conn	Florida (NELAC)	North Carolina						
Method Name 821-R-02-012	Description  Toxicity, Acute (48-Hour)(list upon request)	(NELAC)	IVIdSS	Conn	(NELAC) NP	North Carolina						
SM 4500 CI F	Chlorine, Residual		NP	-	INI							
SM 9215B	Heterotrophic Plate Count (Pour Plate Method)		P									
SM 9215E	Heterotrophic Plate Count (Four Plate Method)		Р									
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)		P									
SM 9222B	Coliforms, Total (Membrane Filter)		P									
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP									
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P									
200.8	Metals (ICP/MS) (list upon request)	NP/P	NP/P	NP/P								
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P	NP/P								
6010B	Metals (ICP)(list upon request)	NP/SW		NP/SW								
245.1	Mercury (CVAA)	NP/P	NP	NP/P								
7470A	Mercury (CVAA)	NP		NP								
7471A	Mercury (CVAA)	SW		SW								
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP	NP/P								
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P		NP/P								
3010A	Preparation, Total Metals	NP/P		NP/P								
3020A	Preparation, Total Metals	NP/P/SW		NP/P/SW		1						
3050B	Preparation, Metals	SW		SW		1						
504.1	EDB, DBCP and 1,2,3-TCP (GC)		Р	Р		1						
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	NP		1						
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP		NP								
3546	Microwave Extraction	SW										
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		NP								
3540C	Soxhlet Extraction											
3550B	Ultrasonic Extraction	SW		SW								
600/4-81-045	Polychlorinated Biphenyls (PCBs) (GC)		NP	NP								
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW		NP/SW								
8082A	PCBs by Gas Chromatography(list upon request)	NP/SW		NP/SW								
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		NP/SW								
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW								
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)			NP/SW		NP/SW						
524.2	Volatile Org Comp (GC/MS)(list upon request)	Р	Р	Р								
524.2	Trihalomethanes		Р	Р								
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	NP								
5035	Closed System Purge and Trap	SW		SW								
5030B	Purge and Trap	NP		NP								
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		NP/SW								
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			NP/SW		NP/SW						
180.1	Turbidity, Nephelometric		Р	Р								
300	Anions, Ion Chromatography	NP/P	NP/P	NP/P								
410.4	COD	NP	NP	NP								
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		SW								
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	NP								
7196A	Chromium, Hexavalent	NP/SW		NP/SW								
9012A	Cyanide, Total and/or Amenable	NP/SW		NP/SW								
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		NP								
9040B	рН	NP		NP								
9045C	pH	SW		SW								
L107041C	Nitrogen, Nitrate	NP	Р	NP/P								
L107-06-1B	Nitrogen Ammonia	NP	NP	NP/P								
L204001A CN	Cyanide, Total		NP/P	NP/P								
L210-001A	Phenolics, Total Recoverable	NP	NP	NP								
SM 2320B	Alkalinity	NP/P	NP/P	NP/P								
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	NP/P								
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	NP/P		1						
SM 2540D	Solids, Total Suspended (TSS)	NP	NP	NP								
SM 3500 CR D	Chromium, Hexavalent	NP		NP								
SM 4500 H+ B	pH	NP/P	NP/P	NP/P								
SM 4500 NO2 B	Nitrogen, Nitrite	NP	Р	NP/P								
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP	NP/P								
SM 4500 P E	Phosphorus, Total	NP	NP	NP								
SM 4500 S2 D	Sulfide, Total	NP		NP								
SM 5210B	BOD, 5-Day	NP	NP	NP								
SM 5310B	Organic Carbon, Total (TOC)	NP	NP	NP/P	<u></u>	1						

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is listing is subject to change based on the laboratories current certification standing.

#### **Login Sample Receipt Check List**

Client: Olin Corporation Job Number: 360-26874-1

Login Number: 26874 List Source: TestAmerica Westfield

Creator: Knollmeyer, Tim D

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.6/0.6 C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

### **TestAmerica Laboratories, Inc.**Chain of Custody Form



•53 Southampton Road Westfield, MA 01085 (P) 413-572-4000 (F) 413-572-3707

															Π.	lob#					Πo	uote	e#	PO#
Client: Olin Chemical/M	ACTEC			Pro	ject #:	610	7-09	9-00	16.0	4	,				. [		3( <sub>6</sub> C	~)	<u>69</u>	71	Щ			
Address: 51 Eames Street	•			Project Ma	nager:	P. 7	Γhon	npsc	n						-	SI	adeo		<del></del>				se	Comments
				•	ork ID:					ter						Chec	Ana k ana						od	(Special Instructions)
Wilmington, MA	U1001															and a	nalyte	es in			-			1100
Phone:	Fax:					: David Chapman ation / Special Report Format									For example: 500-series for drinking water								MCP case narrative	
Requested Turn Ar				Regulatory Cla						<del></del>				ıat	$\dashv$	6	00-seri	es for	was	te wa	ter			
10 Business Day (Std) XX	Rush TAT Red	-		NPDES RCRA							P For				-		000-se omme:						e.	
15 Business Day	24 hrs	72 hrs 5 Day		Other	MCP	GVV	1/51			MC	PQA	/OC	Rot	Ϋ́X										
Other Sample Type Codes	48 hrs	5 Day	/-	Ottlet	T	T			Pres		tive		T		_	<u>a</u>		Ī,		m	T	1	!	1
WW-Wastewater DW-Drinking	water SW-Surfa	acewat	er			1 1	<u> </u>		1	7		η	ē	_ [	ξį	6010B	only	[놂]		6010B	뀌			1
LW-Labwater GW-Groundw						1 1	ass	5	2   ₹		[ <del>7</del> ]		Į.	fate	盲		only	9	Î	py 6	힑			
S-Solid / Soil SL-Sludge	O-Oil Z-Other		<u> </u>		Grab	ers	J. G	NaHSO4/MeOH	HNO3 to pH <	7	VaOH to pH		Ammonia-Nitrogen	Sulfat	Condutivity	Al/Cr by	S260B TMPs	8270C NDPA/BEHP	(MAVPH)	e E	SM4500H+B	1		*
Commis II	,	e)	Sampler's Initials	Date	_	tail.	(P)	Q	5 4	4CI to pH	2 5	1 -	Ž	de,		ĕI÷	<u> </u>	Z	ĮΨ)					
Sample II	,	Sample Type	mpl	Time	l al f	취동	stic	2   2	HNO3	유	NaOH	None	Ĕ	Chloride,	Specific	Diss.	8260B	70(	VPH (	Dissolved	pH by	Cther	Other	,
		Samp Type	Sa	Collected	किंद	3 #	Pla :	<u> </u>	티	포	žΙ	Ž	₹	Ö	ζ	واق	5 8	188	۶	ä	희	<u>5 3</u>	<u>5   Ö</u>	Dissolved metals are field filtered.
QC-PZ-17RR		ςw	MAM	2-15-10	×	3	P		1 4			1	×	×	×	×				ı				Dissolved metals are field filtered.
0		-	,	2-15-10	++	-			-	+		-1	1			+	_	+		$\dashv$	$\top$	十		Analysis
0 - GW - 25		Sw	DLC	14:35	*	3	P		1 2	-		1	۱×	×	$ \times $	×								Ammonia NitrogenLac 107-06-1B
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Leve Jal	<u>\</u>	<u> 2</u>	1120	0 /6	<i>[O_</i>	4	٧	<u>^</u>			<u>~ −</u>	4	<u> </u>					<u>U_</u>			w	16	<i>),</i>	Preservation/pH checked
Method of shipment:				÷.		7	es	stA	m	er	ica	}- V	Ve	est	fie	e/a								By: TDL Date: 2-17-10

### OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST SEMI-VOLATILE ORGAINICS BY METHOD 8270C/625

	attach to this review.	
ACTIO	FION: RPD must be ≤50% for soil and water. Qualify data (J) for both sample results if the RPD exceeds 50%.	
10.0	Application of Validation Qualifiers	
	Was any of the data qualified?  Yes \[ No \script{\sint{\sint\sint\sint\sint\sint\sint\sint\sint	
	If so, apply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in database.    low   evel defection of bis was qualified ND due to	(2-ethyl keryl) Phito black contamina
REFE	FERENCES	Control of the Contro
LAW,	W, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental GA 30144. August 1999.	Services, Kennesaw,
STL-W	-Westfield, 2002. "Olin - General Chemistry Control Limits (Soil & Water)," Severn Trent Laboratories, Inc., 53 Southampton Road, Westfield, MA, 010	085.
	Environmental Protection Agency (USEPA), 1996. "Region 1 EPA-NE Data Validation Guidelines For Evaluating Environmental Analyses' Staff; Office of Environmental Measurement and Evaluation; December 1996	'; Quality Assurance
MADE	DEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance / Quality Requirements," BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.	y Control (QA / QC
MADE	DEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance / Quality Control Guideline Evaluation and reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.	es for Sampling, Data

Version 1.2, Nov 2002

### OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

Reviewer/Date Ti	Chris Ricard	6/22/10
Sr. Review/Date	Chris Ricard	16/25/10
Lab Report # 36	0-20874-1	1 1
Project # 60	7100016-12	

	Dissolved AliCronly	
		OC-PZ-17RR OC-GW-2025DUP OC-GW-25 OC-GW-2020 OC-GW-2025 OC-GW-799
1.0	Laboratory Deliverable Requirements	OC-GW-25 OC-GW-2020
		OC-Gw-2025 OC-Gw-799
	1.1 Laboratory Information: Was all of the following provided in the laboratory report? Yes Mo Check items received.	N/A [_] Comments: 0 c -6-w - 785
	Name of Laboratory  Address  Project ID Phone # Sample identification	ation – Field and Laboratory
	Client Information:	be cross-referenced)
ACTIO	ON: If no, contact lab for submission of missing or illegible information.	
	1.2 Laboratory Report Certification Statement  Yes [ No [ ]	N/A [_] Comments:
Does t	he laboratory report include a completed Analytical Report Certification in the required format?	
ACTIC	N: If no, contact lab for submission of missing certification or certification with correct format.	
	1.3 Laboratory Case Narrative: Yes [ \( \sum \) No [ ]	N/A [_] Comments:
	✓ Narrative serves as an exception report for the project and method QA/QC performance. ✓ Narrative serves as an exception report for the project and method QA/QC performance.	arrative includes an explanation of each discrepancy
		Certification Statement.
ACTIC	ON: If no, contact lab for submission of missing or illegible information.	
	1.4 Chain of Custody (COC) copy present with all documentation completed  Yes   No	N/A [] Comments:
	NOTE: Olin receives and maintains the original COC.	
ACTIO	ON: If no, contact lab for submission of copy of completed COC.	5

	1.5 Sample Receipt Information (Cooler Receipt Form present?):						Yes 🗾	No []	N/A []	Comments:
~~	Were each of into the labora		lowing tasks	completed ar	nd recorded u	upon receipt of the sample(s)				
Samp	ole temperature	confirm	ed: must be	I° − 10° C. (If	samples were	e sent by courier and delivered	on the same	day as colle	ction, tempera	ture requirement does not apply).
☑ Conta	ainer type noted	d <b>⊡</b> ∕san	nple conditio	n observed 🗵	pH verified	(where applicable) Field an	nd lab IDs cro	oss referenc	ed	
ACTIO	N: If no, conta	act lab fo	or submission	of missing or	incomplete d	locumentation.				
	1.5.1	Were a	all samples d	elivered to the	laboratory w	ithout breakage?	Yes	No [_]	N/A [_]	Comments:
	1.5.2	with sa	ample receipt	Receipt Form , condition of ting the qualit	the samples,	ntive indicate other problems analytical problems or special	Yes [_]	No 🗹	N/A [_]	Comments:
	1.6 Sample laborator	Results y report	Section: V for each san	/as each of ti aple?	he following	requirements supplied in the	Yes 🗹	No [_]	N/A []	Comments:
Fie Clea	ld ID and Lab an-up method j rix	ID V/A	☑ Date a ☑ Analys ☑ Target and	nd time collectis method alytes and cond	cted centrations	☑ Preparation method		oreparation/		moisture or solids NA Reporting limitestion clean-up and analysis, where applicable)
ACTIO	ON: If no, cont	act lab f	or submissio	n of missing o	r incomplete	information.				
	1.7 QA/QC laboratory rep	Inform	nation: Was	each of the	e following	information supplied in the	Yes 🔟	No []	N/A [_]	Comments:

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☑ Method	blank results LCS recover	ies MS/MSD recoveries and RPDs Laboratory	duplicate results (where	e applicable)
ACTION:	If no, contact lab for submission	of missing or incomplete information.		
2.0 <u>Ho</u>	olding Times			
ex	technical holding times, determ sceeded? Holding time for meta ater and soil.	nined from date of collection to date of analysis, been ls is 180 days from sample collection to analysis for both	Yes No No	N/A _] Comments:
NOTE: Lis	st samples that exceed hold time	with # of days exceeded on checklist		
		exceeded, qualify all positive results (J) and non-detects ding time) reject (R) all non-detect results.		
3.0 <u>L</u>	aboratory Method			
3.	.1 Was the correct labora	tory method used?	Yes No No	N/A Comments:
	Water Digestion Soil Digestion Metals	3005A or 3010A or 3020A 3050B 6010B or 200.7		
compare	ed to the requested method. equest variance.	ory to provide justification for method change Contact senior chemist to inform Client of change		
3.	.2 Are the practical quan  SOW □ QA	ntitation limits the same as those specified by the PP	Yes Mo No	N/A [_] Comments:
NOTE:		natch the target list specified on the COC.		

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		If no, evaluate variation with respect to sample matrix, preparation, dilution, c. If sample PQL is indeterminate, contact lab for explanation.				
	3.3	Are results present for each sample in the SDG?	Yes [V	No [_]	N/A []	Comments:
ACTIO	N: If no	, check Request for Analysis to verify if method was ordered and COC to verify that it				
	3.4	If dilutions were required, were dilution factors reported?	Yes 🗹	No [_]	N/A [_]	Comments:
ACTIO	N: If no	o, contact the lab for submission.				
4.0	Meth	od Blanks				
	4.1	Is the Method Blank Summary present?	Yes 🔽	No []	N/A []	Comments:
ACT	ION:	If no, call the laboratory for submission of missing data.				
	4.2	Frequency of Analysis: Was a method blank analyzed for each digestion batch of < 20 field samples?	Yes 🔟	No [_]	N/A [_]	Comments:
		If no, contact laboratory for justification. Consult senior chemist for action rate non-compliance.				
	4.3	Is the method blank less than the PQLs for all target elements?	Yes [	No[]	N/A []	Comments:
NOTI samp		DEP requires the method blank to be matrix matched and digested with the			,	
	4.4 the fol	Do any method blanks have positive results for metals? Qualify data according to lowing:	Yes []	No [1/	N/A [_]	Comments:

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		mple concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the the concentration reported if greater than the PQL.			
	If the sa	mple concentration is $> 5 \times$ blank value, no qualification is needed.			
		any blank with positive results, list all contaminants for each method blank value) and the associated samples and qualifiers.	including the conce	ntration detec	eted and the flagging level (flagging level
5.0	Labor	atory Control Standard			
	5.1	Was a laboratory control standard run with each analytical batch of 20 samples or less?	Yes No No	N/A []	Comments:
ACT	TION:	I target, second source LCS is required by MADEP.  Call laboratory for LCS form submittal. If data are not available, use judgement to evaluate data accuracy associated with that batch.			
	5.2	Is a LCS Summary Form present?	Yes No No	N/A [_]	Comments:
ACT	TION: I	f no, contact lab for resubmission of missing data.			
	5.3	Is the recovery of any analyte outside of MADEP control limits?  MADEP	Yes [_] No [_	/ N/A [_]	Comments:
	Sample Water Soil	80-120 within Lab generated limits			e e
with non-	in the ba	If recovery is above the upper limit, qualify all positive sample results atch as (J). If recovery is below the lower limit, qualify all positive and results within the batch as (J). If LCS recovery is <30%, positive and non-are rejected (R).			
deter	or results				

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Comments:

#### 6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

6.1 Were project-specific MS/MSDs collected? List project samples that were spiked.

ACTION: If no, contact senior chemist to see if any were specified.

6.2 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form present?

NOTE: A full target, second source MS/MSD is required by MADEP.

ACTION: If any matrix spike data are missing, call lab for resubmission.

6.3 Were matrix spikes analyzed as indicated on the COC and project schedule?

**ACTION**: If any matrix spike data are missing, call lab for resubmission. If none, no qualification is needed. Narrate non-compliance.

6.4 Are any metal spike recoveries outside of the QC limits?

	MADEP	QAPP	
Sample Type	% Rec	% Rec	Method
Water	75-125	N/A	6010B
Water	N/A	70-130	200.7
Soil	75-125	75-125	6010B

**NOTE**: 
$$%R = (SSR-SR) \times 100\%$$

Where: SSR = Spiked sample result SR = Sample result

SA = Spike added

**NOTE:** If dilutions are required due to high sample concentrations (> 4X spike), the data are evaluated, but no flags are applied.

Yes 🗾	No [_]	N/A [X	Comments:	
Yes []	No [_]	N/A 🚺	Comments: Not Request	ed 15 w
Yes []	No [√]	N/A LAPA	on the COC. A analyzed by the lab batch QC. Comments: Sample OC-PZ-1	

Comments:

Yes [ ] No [ N/A [ ]

# OLIN CORPORATION LEVEL I DATA QUALITY EVALUATION – OPTION 1 STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

<b>NOTE:</b> If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.	±			
<b>ACTION:</b> MS/MSD flags only apply to the sample spiked. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit, qualify positive results and non-detects (J).			2	
6.5 Are any RPDs for MS/MSD recoveries outside of the QC limits?	Yes []	No L	N/A []	Comments:
NOTE: RPD = S-D x 100% Where: $S = MS$ sample result $D = MSD$ sample result				
<b>NOTE:</b> If dilutions are required due to high sample concentrations, the data are evaluated, but no flags are applied.				
<b>ACTION:</b> If the RPD exceeds the control limit, qualify positive results and non-detects (J).				
.0 <u>Laboratory Duplicate</u>		/		
7.1 Was a laboratory duplicate sample analyzed? If so, is the Laboratory Duplicate Sample Form present?	Yes [	No [_]	N/A []	Comments:
NOTE: MADEP refers to this sample as a "matrix duplicate".				
<b>ACTION:</b> If not analyzed, qualification is not needed. If data is missing, contact laboratory for resubmission of report. Narrate non-compliance.				
7.2 Is the RPD between the result for the laboratory duplicate sample and the result for the parent sample outside of the QA/QC limits?	Yes [_]	No [V]	N/A [_]	Comments:

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## OLIN CORPORATION LEVEL I DATA QUALITY EVALUATION - OPTION 1 STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

MADEP Laboratory Duplicate Sample RPD Criteria:	QAPP RPD	
For aqueous results > $5 \times RL$ , RPD must be $\pm 20\%$	20	
For aqueous results < 5× RL, RPD must be ≤ RL	20	
For soil/sediment results > $5 \times$ RL, RPD must be $\pm 35\%$	20	
For soil/sediment results $< 5 \times RL$ , RPD must be $\leq 2 \times RL$	20	
ACTION: If the RPD exceeds the limits, qualify both pos	sitive results and non-detects	
as estimated and flag them J. Narrate non-compliance		
3.0 Sampling Accuracy		

## 8.0

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist.

 Yes
 No
 N/A
 Comments:

 Yes
 No
 N/A
 Comments:

Do any rinsate blanks have positive results? 8.2

NOTE: MADEP does not require the collection of rinsate blanks.

ACTION: Evaluate rinsate results against blank results to determine if contaminant may be laboratory-derived. If results are not lab-related, qualify according to below.

If the sample concentration is  $< 5 \times$  blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is  $> 5 \times$  blank value, no qualification is needed.

#### **Field Duplicates** 9.0

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates.

/			
Yes 🚺	No []	N/A []	Comments:

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# OLIN CORPORATION LEVEL I DATA QUALITY EVALUATION – OPTION 1 STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

	,			
9.2 Were field duplicates collected per the required frequency?	Yes [V]	No []	N/A [_]	Comments:
SOW ☑ QAPP (1 per 10) ☐ MADEP Option 1 (1 per 20) ☐ MADEP Option 3 (1 per 10) ☐				
9.3 Was the RPD $\leq$ 50% for soils or waters? Calculate the RPD for all results and attach to this review.	Yes	No [_]	N/A [_]	Comments:
ACTION: RPD must be ≤50% for soil and water. Qualify data (J) for both sample results i	f the RPD e	xceeds 50°	Vo.	
10.0 Special QA/QC				
10.1 Were both total and dissolved metals analysis performed? If so, the dissolved metal concentration should not exceed that of the total metal.	Yes []	No I	N/A [_]	Comments:
<b>ACTION:</b> If results for both total and dissolved are $\geq 5x$ the PQL and the dissolved concentration is 10% higher than the total, flag both results as estimated (J). If total and dissolved concentrations are less than $5x$ the PQL and the difference exceeds $2x$ the PQL, flag both results as estimated (J)				

# OLIN CORPORATION LEVEL I DATA QUALITY EVALUATION – OPTION 1 STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

10.0	Application of Validation Qualifiers				
	Was any of the data qualified?	Yes [_]	No I	N/A [_]	Comments:
If so, a	pply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in da	tabase.			

### REFERENCES

- LAW, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental Services, Kennesaw, GA 30144. August 1999
- U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance and Quality Control (QA/QC) Requirements." BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance and Quality Control Guidelines for Sampling, Data Evaluation and Reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.

Reviewer/Date	Tige Conning	hom /	6/22/10
	Chris Rica	andr 6	125/10
Lab Report # TA	L-Westfield	360-	26874-1
Project # 610	7 1000 16-	- 12	<del></del>

	<b>Note:</b> The following analyses will be evaluated according to the "MADEP QA/QC Gui however, may not list QA/QC criteria for every chemical analysis. Where not defined by MA not define criteria, QA/QC requirements will default to limits employed by the laboratory.	DEP, criteria will default to values stipulated in the QAPP. Where the QAPP does $\frac{\partial C}{\partial t} = \frac{\partial C}{\partial t} = \frac{17RR}{R} = 0.00000000000000000000000000000000000$
.0	Laboratory Deliverable Requirements	· OC-G-W- 25 · OC-G-W-795 · OC-G-W- 2025 · DUP · OC-G-W-785
	<b>1.1 Laboratory Information</b> : Was all of the following provided in the laboratory report? Check items received.	Yes No No N/A Comments:
	☐ Name of Laboratory ☐ Address ☐ Project ID ☐ Phone #  Client Information: ☐ Name ☐ Address ☐ Client Contact	Sample identification – Field and Laboratory
	Client Information:	(IDs must be cross-referenced)
CTI	ON: If no, contact lab for submission of missing or illegible information.	
	1.2 Laboratory Report Certification Statement	Yes [ No [] N/A [] Comments:
	Does the laboratory report include a completed Analytical Report Certification in the r	equired format?
CTIC	N: If no, contact lab for submission of missing certification or certification with correct f	iormat.
	1.3 Laboratory Case Narrative:	Yes [ No [ ] N/A [ ] Comments:
	Narrative serves as an exception report for the project and method QA/QC performance.	Parative includes an explanation of each discrepancy on the Certification Statement.
CTIC	N: If no, contact lab for submission of missing or illegible information.	
	1.4 Chain of Custody (COC) copy present with all documentation completed?	Yes No No N/A Comments:
	Does the laboratory report include copies of Chain of Custody forms containing all samples in	this SDG?
	NOTE: Olin receives and maintains the <i>original</i> COC.	
CTIC	ON: If no, contact lab for submission of copy of missing completed COC.	
	1.5 Sample Receipt Information (Cooler Receipt Form): Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?	

	Yes 🗹	No []	N/A [_]	Comments:
Sample temperature confirmed: must be $1^{\circ} - 10^{\circ}$ C. (If samples were sent by courier and delivered of	on the same o	lay as collecti	ion, temperatu	re requirement does not apply).
Container type noted Condition observed pH verified (where applicable) Field and lab II	Ds cross refe	renced		
ACTION: If no, contact lab for submission of missing or incomplete documentation.  1.5.1 Were the correct bottles and preservatives used?  Ammonia,— 1 Liter polyethylene/H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C  Oil & Grease — 1 Liter glass/HCL or H2SO4 to pH<2,cool to 4°C  Alkalinity — 1 Liter polyethylene/cool to 4°C  Chemical Oxygen Demand — 50 mL polyethylene/H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C  Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C  Nitrate/nitrite - H2SO4 to pH<2,cool to 4°C	Yes V	No [_]	N/A []	Comments:
Organic Carbon – 500 mL amber glass bottle/HCl or H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C				
Phenolics - H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C  Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C  ACTION: If no, inform senior chemist. Document justification for change in container/volume (if applicable), qualify positive and non-detect data (J) data if cooler				
temperature exceeds 10°C. Rejection of data requires professional judgment  1.5.2 Were all samples delivered to the laboratory without breakage?	Yes 🗹	No [_]	N/A []	Comments:
1.5.3 Does the Cooler Receipt Form or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?		No IV	N/A []	Comments:

1.6 Sample Results Section: Was the following report for each sample?	information supplied in the	laboratory Yes ☑ No ☐	N/A [_] Comments:	
Field ID and Lab ID  Clean-up method N/A  Date and time collected  Analysis method	Analyst Initials Preparation method	Dilution Factor Date of preparation/extraction	% moisture or solids MA	Reporting limits blicable
Matrix Target analytes and concentr	rations	Units (soils must be reported	in dry weight)	
ACTION: If no, contact lab for submission of missing or inc	omplete information.			
1.7 QA/QC Information: Was the following information for each sample batch?	nation provided in the laborat	ory report Yes No No	N/A [_] Comments:	
☐ Method blank results ☐ LCS recoveries ☐ MS/MSI	D recoveries and RPDs	aboratory duplicate results (where	applicable)	
ACTION: If no, contact lab for submission of missing or inc	omplete information.			
		. 8		
2.0 <u>Holding Times</u>		Yes No No	N/A Comments:	
Have any technical holding times, determined from	date of collection to date of	analysis, been exceeded? The hol	ding times are as follows:	
28 days = ammonia, chemical oxygen demand	d, chloride, organic carbon, o	il & grease, specific conductance,	total organic carbon and sulfate	
Alkalinity = 14 days Sulfid	e, TDS, TSS = 7 days	pH = analyze immediately	Nitrate nitrogen as $N = 48$ hrs	
Nitrite nitrogen as N = 48 hrs Nitrat	e + Nitrite as N = 28 days			
NOTE: List samples that exceed hold time with # of	days exceeded on checklist			
<b>ACTION:</b> If technical holding times are exceeded qualify judgment used to qualify soils.	results (J). For water sample	es that are grossly exceeded (>2X	hold time) reject (R) all non-detect results	s. Professional
3.0 Laboratory Method		Yes No No	N/A [] Comments:	
3.1 Was the correct laboratory method used?				
ACTION: If no, contact lab to provide justification for metho	od change compared to the req	uested method. Contact senior cher	mist to inform Client of change or to request	variance.

	3.2 Are the practical quantitation li  ☐ QAPP/IRSWP ☐ Lab?	mits the same as those specified by	the Yes No No N/A	Comments:
	Note: The MADEP QA/QC Guidelines do therefore all criteria will default to values stip define criteria, QA/QC requirements defaul may also apply.	nulated in the QAPP*. Where the QAPP doe	s not	
	Ammonia* ☑ = 0.1 mg/ L	Alkalinity** $\square = 1 \text{ mg/L}$	Bicarbonate Alkalinity** $\square = 1 \text{ mg/L}$	Carbonate Alkalinity** $\square = 1 \text{ mg/L}$
	Nitrate Nitrogen as N* $\square$ = .05 mg/L	Nitrite Nitrogen as N* $\square$ = .01 mg/L	Chloride* ■ 1 mg/L	Hardness $*\Box = 2 \text{ mg/L}$
	Spec. Cond.** 3 umhos/cm	Total Organic Carbon** □ = 1 mg/L	Oil & Grease* $\square = 5.5 \text{ mg/L}$	Sulfate (EPA 300.0)* 🕡 = 2 mg/L
	COD:* Low – 20 mg/L	COD* High - 50 mg/L □	$TDS* \square = 10 \text{ mg/L}$	$TSS* \square = 5 \text{ mg/L}$
	$pH* \square < 2 \text{ to} > 12$	Phenolic - 0.01 mg/L		
	Other parameter(list)	_PQL =	urce of PQL =	
	Other parameter(list)	PQL =	urce of PQL =	
ACTIO	N: If no, evaluate change with respect to san	nple matrix, preparation, dilution, moisture,	etc. If sample PQL is indeterminate, contact l	ab for explanation.
	3.3 Are the appropriate parameter results pro	esent for each sample in the SDG?	Yes No No N/A	Comments:
ACTIO	N: If no, check Request for Analysis to verify	y if method was ordered and COC to verify t	hat it was sent, and contact lab for resubmiss	ion of the missing data
	3.4 If dilutions were required, were dilution to	factors reported?	Yes No No N/A	Comments:
ACTIO	N: If no, contact the lab for submission.			
4.0	Method Blanks		Yes No No N/A	Comments:
	4.1 Are the Method Blank Summaries prese	nt?		
ACTIO	N: If no, call the laboratory for submission o	f missing data.		
	4.2 Was a method blank analyzed for each 20 or less?	analysis batch of wet chemistry field sample	es of Yes No No N/A	Comments:

ACTIO	N: If no,	document discrepancy in case narrative and contact lab for justification. Consult senio	or chemist fo	r action need	led.	
	4.3 Is the	e method blank less than the PQL? (See Section 3.2 for PQLs).	Yes 🔽	No [_]	N/A []	Comments:
		ny method blanks have positive results for wet chemistry parameters? Qualify data g to the following:	Yes []	No L	N/A [_]	Comments:
	If the san PQL or t	nple concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the he concentration reported if greater than the PQL.				
	If the san	nple concentration is $> 5 \times$ blank value, no qualification is needed.				
ACTIO qualifier		blank has positive results, list all the concentrations detected and flagging level (flag	gging level =	= 5 × blank v	ralue) on the c	hecklist. List all affected samples and their
5.0	<u>Laborat</u>	ory Control Standards				
	5.1	Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less?	Yes [	No [_]	N/A []	Comments:
		call laboratory for LCS form submittal. If data is not available, use professional mine qualification actions for data associated with the batch.				
	5.2	Is a LCS Summary Form present?	Yes	No []	N/A [_]	Comments:
ACTIO	N: If no,	contact lab for resubmission of missing data.				
	5.3	Is any wet chemistry analyte LCS recovery outside the control limits?	Yes []	No L	N/A []	Comments:
ACHO	C 40 C - 30 C 5 C 5 C 6 C 6 C 6 C 6 C 6 C 6 C 6 C 6		Yes []	No L	N/A [_]	Comments:

WET CHEM.doc

LCS Limits:			
Alkalinity** $\square = 80-120\%$ Total Organic Carbon** $\square = 80-120\%$ COD Low* $\square = 80-120\%$ Hardness* $\square = 80-120\%$	Bicarbonate Alkalinity** $\square = 80-120\%$ TDS** $\square = 80-120\%$ COD High* $\square = 80-120\%$ Chloride* $\square = 80-120\%$	Carbonate Alkalinity** $\square = 80\text{-}120\%$ Oil & Grease* $\square = 80\text{-}120\%$ Nitrate Nitrogen as N** $\square = 80\text{-}120\%$ Sulfate (EPA 300.0)* $\square = 80\text{-}120\%$	Specific Conductivity * $\blacksquare$ = 80-120% Ammonia Nitrogen as N* $\blacksquare$ = 80-120% Nitrite Nitrogen as N** $\square$ = 80-120% pH* $\square$ = 98-102% TSS* NA
Other parameter(list)	%R =	Rec Limits=	
Other parameter(list)	%R =		
	(MADEP has not yet defined LCS reco		
within the batch as (J). If LCS recovery is <10%  6.0 Matrix Spikes	, non decertosano de regente (cy)		
N	Communication and an area of the assertable	- on tools	
Matrix spikes may be collected at different specific schedules. Confirm spike requirem			
6.1 Were project-specific MS/MSD ACTION: If no, contact senior chemist to see if	Os analyzed? List project samples that were sany were specified.	spiked.  Yes   No   N/A	COC but analyzed comments: for Sulfate & Chloric
6.2 Is the MS/MSD Recovery For	m present?		COC but analyzed
ACTION: If no, contact lab for resubmission of	missing data.	Yes   V   No   N/A	Comments: +or Sulfate & (Morie
6.3 Were matrix spikes analyzed matrix?	at the required frequency of 1 per 20 san	nples per Yes No No N/A	On Sample 00- p2 -17
ACTION: If any matrix spike data is missing, c	all lab for resubmission.	Yes No No N/A Donly for Chloride	Silfate
6.4 Are any wet chemistry analyte	enile recoveries outside of the OC limits?	- only to callo log	

Yes No No N/A

Comments:

6.4

Are any wet chemistry analyte spike recoveries outside of the QC limits?

	NOTE: %R = SA	(SSR-SR) x	100%		Where	e: S	SR =	Spiked SR	sample = Sample	result
	SA		SA = Spike added					Sic	Sample	resun
	MS/MSD Recovery Limits:									
	Alkalinity* = NA	Bicarbonate .	Alkalinity* = NA	Carbonate alkalinity*	= NA	Ammonia'	* (LACHA	T) 🗆 = 75	-125%	
	Chloride*(SM 4500 Cl) <b>□</b> = 75-125°	% Specific Con	ductivity * = NA	Total Organic Carbon	1* = NA	TDS** =	NA			
	Oil & Grease* = NA		□ = 75-125%	COD High* □ = 75-1	125%	Nitrate Nit	rogen as N	J** 🗆 = 75	5-125%	
	Nitrite Nitrogen as N** □ = 75-125	% Hardness* □	] = 75-125%	Sulfate (EPA 300.0)*	= 75-125%	pH* = NA	4	TSS* =	= NA	
	Other parameter(list)				☐ Rec Lim	its =				
	* = Laboratory Limits	** = Olin QAPP Limi	ts (MADEP has not	yet defined LCS reco	very limits for	wet chemis	stry analys	ses.)		
	NOTES: 1) If only one of the recov 2) If the MS/MSD was per					. Use profe	ssional jud	Igment for	the MS/MSD	flags.
qualify	N: MS/MSD flags only apply to the positive results as estimated (J). If the D recovery is < 30% and the sample is	e recoveries of the MS	and MSD are lower th	an the lower control lin	If the recoverient but > 30%, o	es of the MS qualify both	and MSD positive re	exceed the esults and r	e upper contr non-detects (J	ol limit, ). If the
	N: Laboratory control limits apply ved, but no flags are applied.	when spiked sample res	sults fall within the nor	mal calibration range. If	dilutions are re	equired due	to high sar	mple conce	entrations, the	data is
	6.5 Are any RPDs for MS/MSD reco	overies outside of the Q	QA/QC limits?							
	<b>NOTE:</b> RPD = $\frac{S - D}{(S + D)/2}$ x 100%	Where S = MS resu D = MSD re	ilt esult	Yes []	No   N	I/A []	Comment	s: .		
	MS/MSD RPD Limits:									
	RPD ≤20									
7.0	<b>Laboratory Duplicate</b>									
	Are the RPDs for the laboratory du	plicates <20% unless	otherwise specified belo	ow? Yes []	No [_] N	I/A [V	Comment	s: ,	lyzed	
							M	It and	lyzed	

ACTI	ON: If the RPD is	greater than specified limits, qualify all results for that a	nalyte as estimated (J)				
	pH* □ = 3%	Specific Conductivity *□ = 5%	$TSS^{**} \square = 6\%$		•	ΓDS** □ = 6%	6
8.0	Sampling Accu	iracy					
		d water samples are collected directly from a tap, Rinse blanks will not be collected.	process stream, or		52		
		te blanks collected? Prior to evaluating rinsate blanks bles from the senior chemist.	, obtain a list of the	Yes []	No [V]	N/A [_]	Comments:
	8.2 Do any rins	ate blanks have positive results?		Yes []	No []	N/A	Comments:
ACT	If the sample co	insate results vs. blank results to determine if containoncentration is $< 5 \times$ blank value, flag sample result non- oncentration is $> 5 \times$ blank value, no qualification is need	detect "U" at the PQL				
NOTE	E: MADEP does	not require the collection of rinsate blanks.					
9.0	Field Duplicate	<u>es</u>					
	9.1 Were fie field duplic	eld duplicate samples collected? Obtain a list of samples cates.	and their associated	Yes 🔽	No [_]	N/A [_]	Comments: OC-GW-2025 OC-GW-2025-DU
	9.2 Were field	duplicates collected per the required frequency?		Yes 🔟	No []	N/A [_]	Comments:
Q/	APP/IRSWP □	MADEP Option 1(1 per 20) ☐ MADEP Option	3 (1 per 10) 🛮				
	9.3 Was the RF attach to this	PD ≤ 30% for waters ≤ 50% for soils? Calculate the R review.	PD for results and	Yes 🔽	No [_]	N/A [_]	Comments:

ACTION:. Qualify data (J) for both sample results if the RPD exceeded.			
T O W			
Was any of the data qualified?	Yes []	No N/A	Comments:
If so, apply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in database.			

### REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.

## **FILE COPY**



## ANALYTICAL REPORT

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY:

Job Number: 360-26898-1

Job Description: Quarterly Surfacewater

For:
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, TN 37312-4441

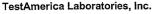
Attention: Mr. Steven Morrow

Joseph a. Chem. J.

Approved for release.
Joe Chimi
Report Production Representative
2/26/10 12:34 PM

Designee for
Becky C Mason
Project Manager II
becky.mason@testamericainc.com
02/26/2010

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NH DES 2539, NELAP FL E87912 TOX, NELAP NJ MA008 TOX, NELAP NY 10843, NY ELAP 10843, North Carolina 647, NELAP PA 68-04386. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.



TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085 Tel (413) 572-4000 Fax (413) 572-3707 <a href="https://www.testamericainc.com">www.testamericainc.com</a>



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_aborator	/ Name:	TestAmeri	ca Westfield		Proj	ect #:	360-	26898	-1
Project Location: MADEP RTN <sup>1</sup> :									
		cations for the	ollowing data se	t:[list Laboratory	/ Sample ID Nun	nber(s)]			
360-26898	3-(1-8)								
Sample M	atrices:	Groundwater		ediment	Drinking Wate				
MCP SW		8260B( )	8151A ( )	8330 ( )	6010B (x)	7470A/1A (		Othe	r ( )
Methods		8270C( ) 8082 ( )	8081A ( ) 8021B ( )	VPH ( ) EPH ( )	6020 ( ) 7000 S <sup>3</sup> ( )	9014M <sup>2</sup> /90 7196A ( )	12()		
As specific Compend	ed in MADEP		e Tracking Num	. ,	` ,	7 190A ( )			
•	Methods.		6 Method 9014 o	, , ,		ble Cyanide	(PAC	) Metho	d
check all	that apply)		6 Methods 7000	·		-	`		
An aff	irmative respo	nse to questi	ons A, B, C and	D is required f	or "Presumptiv	e Certainty	" statı	us	
Α	Were all samp	oles received b	y the laboratory	in a condition co	nsistent with		Yes		No <sup>1</sup>
	that described	on the Chain-	of-Custody docu	mentation for th	e data set?		$\sqrt{}$		
	Were all QA/Q	QC procedures	required for the	specified analyt	ical method(s)		Yes		No <sup>1</sup>
В		•	ed, including the	•	, ,		$\checkmark$		
	discuss in a na	arrative QC da	ta that did not m	eet appropriate	performance				
	standards or g	guidelines?							
	Does the analy	ytical data incl	uded in this repo	rt meet all the re	equirements		Yes	N/A	No <sup>1</sup>
С	for "Presumpti	ive Certainty",	as described in S	Section 2.0 (a),	(b), (c) and (d) o	f	$\checkmark$		
			VII A, " Quality A		•				
	Control Guide	lines for the Ad	equisition and Re	porting of Analy	tical Data"?				
	VPH and EPH	l methods on	<b>y</b> : Was the VPH	or EPH Method	d conducted with	out	Yes	N/A	No <sup>1</sup>
D	significant mo	difications (see	Section 11.3 of	respective Met	nods)?			$\sqrt{}$	
	1					0.4.5.4.1	1 . 4 . 4		
			s E and F below			e Certainty		<u>S</u>	1
E		erformance st nods achieved	andards and rec	ommendations i	for the		Yes √		No <sup>1</sup>
F	1			lamanta far tha	anacified			N/A	No <sup>1</sup>
Г	method(s) rep	•	st compounds/e	iements for the	specified		Yes	IN/A	√
	iniculou(3) rep	ortou:							•
	<sup>1</sup> All Negative r	responses mus	st be addressed	in an attached E	nvironmental La	boratory ca	se nar	rative.	
. the und			ains and penalt						
		-	ning the inform						
analytica	report is, to th	ne best of my	knowledge and	belief, accurat	e and complete	).			
		1,	~/-						
	Signature:	200	Lasten		Position:	Laborator	y Dire	ctor	
	Printed Name:	Steven C. H	artmann		Date:	2	2/26/10	12:28	
	form has been electronica					A, Rev 3.2			pril-04
	9:	MADEP MA014	NELAP FL E87912 TOX		TestAmerica Westfield				
TestA	merica	NY DOH 10843	NELAP NJ MA008 TOX		53 Southampton Rd,				
1001/									
	ENVIRONMENTAL TESTING	RI DOH 57 CT DPH 0494	NELAP NY 10843 NH DES 253901-A	STEO IN ACCORDANG	Westfield, MA 01085 Tel:(413)572-4000				

Laborator	y Name:	TestAmeri	ca Westfield		Proje	ect #:	360-	26898	-1
Project Lo	cation:				MADEP F	RTN <sup>1</sup> :			
This form	provides certific	cations for the f	ollowing data set	::[list Laborator	y Sample ID Nun	nber(s)]			
360-26898	8-(1-8)								
Sample M	latrices:	Groundwater	Soil/Se	ediment	Drinking Water	Other	:		
MCP SW	/-846	8260B( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A (	,	Other	(x)
Methods	Used	8270C( )	8081A ( )	VPH()	6020 ()	9014M <sup>2</sup> /90 <sup>2</sup>	2()		
	ed in MADEP	8082 ( )	8021B ( )	EPH()	7000 S <sup>3</sup> ( )	7196A ( )			
Compend			e Tracking Numb	, ,		hla Cvanida	(DAC)	Motha	۵
•	Methods. that apply)			•	iologically Availa vidual method ar	-	(PAC)	) Metrio	u
	,					-	ctoti	10	
	-				for "Presumptiv	e Certainty		15	1
Α			y the laboratory in of-Custody docur				Yes √		No <sup>1</sup>
	Were all QA/C	QC procedures	required for the s	specified analy	ical method(s)		Yes		No <sup>1</sup>
В		•	d, including the r	-			$\sqrt{}$		
			a that did not me	eet appropriate	performance				
	standards or g	guidelines?							
	Does the anal	ytical data inclu	ided in this repor	t meet all the r	equirements		Yes	N/A	No <sup>1</sup>
С	for "Presumpti	ive Certainty", a	as described in S	Section 2.0 (a),	(b), (c) and (d) of	:		$\sqrt{}$	
			VII A, " Quality A		•				
	Control Guide	lines for the Ac	quisition and Re	porting of Analy	rtical Data"?				
	VPH and EPH	I methods onl	y: Was the VPH	or EPH Metho	d conducted with	out	Yes	N/A	No <sup>1</sup>
D	significant mo	difications (see	Section 11.3 of	respective Met	hods)?			$\sqrt{}$	
	A respons	se to question	s F and F helov	v is required fo	or "Presumptive	Certainty"	etatu	<u> </u>	
						Ocitainty			No <sup>1</sup>
E	•	nods achieved?	andards and reco	mmendations	for the		Yes √		INO
F	•		st compounds/el	omanta for the	cnocified		Yes	N/A	No <sup>1</sup>
•	method(s) rep	•	st compounds/en		specified		163	\(\sqrt{\sq}}}}}}}\sqrt{\sq}}}}}}}}}\sqit{\sqrt{\sqrt{\sqrt{\sq}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}	INO
		ortou.						'	
	<sup>1</sup> All Negative r	resnonses mus	t he addressed i	n an attached i	Environmental La	horatory cas	e nari	ative	
the und					hat, based upor			auvo.	
	_	-	-		erial contained i		ıaı		
	-		_		te and complete				
·		_	/	·	•				
	Signature:	STA	Varian		Position:	Laboratory	Dire	ctor	
	Printed Name:	Steven C. H	artmann		Date:	2	/26/10	12:28	
he certification	form has been electronica				CAM VII A	A, Rev 3.2			oril-04
		MADEP MA014	NELAP FL E87912 TOX	•	TestAmerica Westfield				
		MADE! MAD!							
Test <sub>A</sub>	merica	NY DOH 10843	NELAP NJ MA008 TOX		53 Southampton Rd,				
TestA	Merica ENVIRONMENTAL TESTING			TEO IN ACCORDAN	53 Southampton Rd, Westfield, MA 01085 Tel:(413)572-4000				

### **CASE NARRATIVE**

**Client: Olin Corporation** 

**Project: Quarterly Surfacewater** 

Report Number: 360-26898-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### **RECEIPT**

The samples were received on 02/18/2010; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.6 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2 C of the required temperature or method specified range. For samples with a specified temperature of 4 C, samples with a temperature ranging from just above freezing temperature of water to 6 C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

MCP regulatory standard criteria were not specified for this report. Therefore, method reporting limits (RLs) were not assessed against any MCP standards as it may pertain to Question "E" on the Presumptive Certainty Certification Form (MADEP reference: WSC-CAM-AN-093008 - WSC-CAM Analytical Notes).

### **TOTAL METALS**

Samples 360-26898-1 through 360-26898-8 were analyzed for total metals in accordance with EPA SW-846 Method 6010B. The samples were prepared and analyzed on 02/19/2010.

Chromium was detected in method blank MB 360-55194/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No other difficulties were encountered during the metals analyses.

All other quality control parameters were within the acceptance limits.

### **DISSOLVED METALS**

Samples 360-26898-1 through 360-26898-8 were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 02/19/2010.

The presence of the '4' qualifier in the report indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. Refer to the QC report for details.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the dissolved metals analyses.

All quality control parameters were within the acceptance limits.

### **ANIONS**

Samples 360-26898-1 through 360-26898-8 were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 02/19/2010.

Samples 360-26898-1 through 360-26898-8(10X) required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

### **AMMONIA**

Samples 360-26898-1 through 360-26898-8 were analyzed for ammonia in accordance with LACHAT 107-06-1B. The samples were prepared and analyzed on 02/25/2010.

Samples 360-26898-2 through 360-26898-4(10X), 360-26898-5 and 360-26898-6(5X) required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

### SPECIFIC CONDUCTANCE

Samples 360-26898-1 through 360-26898-8 were analyzed for specific conductance in accordance with SM 2510B. The samples were analyzed on 02/19/2010.

No difficulties were encountered during the specific conductance analyses.

All quality control parameters were within the acceptance limits.

## **EXECUTIVE SUMMARY - Detections**

Lab Sample ID C	lient Sample ID	Result / Qu	alifier	Reporting Limit	Units	Method
360-26898-1	OC-SW-ISCO-3-0.2					
Aluminum Sodium Sulfate Nitrate as N Chloride Ammonia Specific Conductance		91 77000 46 1.2 160 3.1 700	J	100 2000 2.0 0.050 10 0.10 1.0	ug/L ug/L mg/L mg/L mg/L umhos/cm	6010B 6010B 300.0 300.0 300.0 L107-06-1B SM 2510B
<b>Dissolved</b> Sodium		81000		2000	ug/L	6010B
360-26898-2	OC-SW-ISCO-2-0.2					
Aluminum Chromium Sodium Sulfate Nitrate as N Chloride Ammonia Specific Conductance		3900 810 160000 450 0.94 220 72 1700	В	100 5.0 2000 20 0.050 10 1.0	ug/L ug/L ug/L mg/L mg/L mg/L mg/L umhos/cm	6010B 6010B 6010B 300.0 300.0 300.0 L107-06-1B SM 2510B
Dissolved Aluminum Chromium Sodium		510 170 170000		100 5.0 2000	ug/L ug/L ug/L	6010B 6010B 6010B
360-26898-3	OC-SW-PZ-16RR-0.2					
Aluminum Chromium Sodium Sulfate Nitrate as N Chloride Ammonia Specific Conductance		5300 1200 160000 320 2.4 240 40 1500	В	100 5.0 2000 20 0.050 10 1.0	ug/L ug/L ug/L mg/L mg/L mg/L mg/L umhos/cm	6010B 6010B 6010B 300.0 300.0 L107-06-1B SM 2510B
Dissolved Aluminum Chromium Sodium		220 130 160000		100 5.0 2000	ug/L ug/L ug/L	6010B 6010B 6010B

## **EXECUTIVE SUMMARY - Detections**

Lab Sample ID C	lient Sample ID	Result / Qualifier	Reporting Limit	Units	Method
360-26898-4	OC-SW-PZ-16RR-0.2-	DUP			
Aluminum Chromium Sodium Sulfate Nitrate as N Chloride Ammonia Specific Conductance		4800 1100 B 160000 310 2.4 240 43 1500	100 5.0 2000 20 0.050 10 1.0	ug/L ug/L ug/L mg/L mg/L mg/L mg/L umhos/cm	6010B 6010B 6010B 300.0 300.0 300.0 L107-06-1B SM 2510B
Dissolved Aluminum Chromium Sodium		210 120 160000	100 5.0 2000	ug/L ug/L ug/L	6010B 6010B 6010B
360-26898-5	OC-SW-PZ-17RR-0.2				
Aluminum Chromium Sodium Sulfate Nitrate as N Chloride Ammonia Specific Conductance Dissolved		2600 630 B 140000 210 3.3 230 33 1300	100 5.0 2000 20 0.050 10 0.50 1.0	ug/L ug/L ug/L mg/L mg/L mg/L umhos/cm	6010B 6010B 6010B 300.0 300.0 300.0 L107-06-1B SM 2510B
Aluminum Chromium Sodium		130 83 150000	100 5.0 2000	ug/L ug/L ug/L	6010B 6010B 6010B
360-26898-6	OC-SW-SD-17-0.2				
Aluminum Chromium Sodium Sulfate Nitrate as N Chloride Ammonia Specific Conductance		4600 840 B 130000 200 3.6 240 48 1300	100 5.0 2000 20 0.050 10 0.50	ug/L ug/L ug/L mg/L mg/L mg/L mg/L umhos/cm	6010B 6010B 6010B 300.0 300.0 300.0 L107-06-1B SM 2510B
<b>Dissolved</b> Aluminum Chromium Sodium		150 60 150000	100 5.0 2000	ug/L ug/L ug/L	6010B 6010B 6010B

## **EXECUTIVE SUMMARY - Detections**

Lab Sample ID C Analyte	lient Sample ID	Result / Quali	fier	Reporting Limit	Units	Method
360-26898-7	OC-SW-PZ-18R-0.2					
Aluminum		140		100	ug/L	6010B
Chromium		22	В	5.0	ug/L	6010B
Sodium		120000		2000	ug/L	6010B
Sulfate		86		2.0	mg/L	300.0
Nitrate as N		0.69		0.050	mg/L	300.0
Chloride		220		10	mg/L	300.0
Ammonia		16		0.10	mg/L	L107-06-1B
Specific Conductance		950		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		120		100	ug/L	6010B
Chromium		20		5.0	ug/L	6010B
Sodium		130000		2000	ug/L	6010B
360-26898-8	OC-SW-ISCO-1-0.2					
Aluminum		130		100	ug/L	6010B
Chromium		20	В	5.0	ug/L	6010B
Sodium		110000		2000	ug/L	6010B
Sulfate		80		2.0	mg/L	300.0
Nitrate as N		0.76		0.050	mg/L	300.0
Chloride		220		10	mg/L	300.0
Ammonia		14		0.10	mg/L	L107-06-1B
Specific Conductance		940		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		110		100	ug/L	6010B
Chromium		19		5.0	ug/L	6010B
Sodium		130000		2000	ug/L	6010B

### **METHOD SUMMARY**

Client: Olin Corporation Job Number: 360-26898-1

Description	Lab Location	Method Preparation Method
Matrix: Water		
Dissolved Metals	TAL WFD	SW846 6010B
Total Metals	TAL WFD	SW846 6010B
Sample Filtration, Field	TAL WFD	FIELD_FLTRD
Preparation, Total Metals	TAL WFD	SW846 3010A
Chloride & Sulfate	TAL WFD	40CFR136A 300.0
Nitrate & Nitrite	TAL WFD	40CFR136A 300.0
Nitrogen Ammonia	TAL WFD	LACHAT L107-06-1B
Distillation, Ammonia	TAL WFD	Distill/Ammonia
Conductivity, Specific Conductance	TAL WFD	SM SM 2510B

### Lab References:

TAL WFD = TestAmerica Westfield

### **Method References:**

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Method	Analyst	Analyst ID
SW846 6010B	Smith, Tim J	TJS
40CFR136A 300.0	Lalashius, Andrew L	ALL
LACHAT L107-06-1B	Lalashius, Andrew L	ALL
SM SM 2510B	Emerich, Rich W	RWE

## **SAMPLE SUMMARY**

			Date/Time	Date/Time
Lab Sample ID	Client Sample ID	Client Matrix	Sampled	Received
360-26898-1	OC-SW-ISCO-3-0.2	Water	02/18/2010 0845	02/18/2010 1655
360-26898-2	OC-SW-ISCO-2-0.2	Water	02/18/2010 0900	02/18/2010 1655
360-26898-3	OC-SW-PZ-16RR-0.2	Water	02/18/2010 0930	02/18/2010 1655
360-26898-4	OC-SW-PZ-16RR-0.2-DUP	Water	02/18/2010 0930	02/18/2010 1655
360-26898-5	OC-SW-PZ-17RR-0.2	Water	02/18/2010 0950	02/18/2010 1655
360-26898-6	OC-SW-SD-17-0.2	Water	02/18/2010 1000	02/18/2010 1655
360-26898-7	OC-SW-PZ-18R-0.2	Water	02/18/2010 1035	02/18/2010 1655
360-26898-8	OC-SW-ISCO-1-0.2	Water	02/18/2010 1045	02/18/2010 1655

## **SAMPLE RESULTS**

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441 Job Number: 360-26898-1

Client Sample ID:

OC-SW-ISCO-3-0.2

Lab Sample ID:

360-26898-1

Date Sampled:

02/18/2010 0845

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifie	er	Unit	MDL	RL	Dilution
Method: Dissolved-6010B			Date Ar	nalyzed:	02/19/2010 1415	
Aluminum	ND		ug/L	39	100	1.0
Chromium	ND		ug/L	1.3	5.0	1.0
Sodium	81000		ug/L	250	2000	1.0
Method: 6010B			Date Ar	nalyzed:	02/19/2010 1550	
Prep Method: 3010A			Date Pr	epared:	02/19/2010 0735	
Aluminum	91	J	ug/L	39	100	1.0
Chromium	ND		ug/L	1.3	5.0	1.0
Sodium	77000		ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-ISCO-3-0.2

Lab Sample ID:

360-26898-1

Date Sampled:

02/18/2010 0845

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Analy	yzed: 02/1	9/2010 1655	
Sulfate	46	mg/L	2.0	2.0	1.0
Nitrate as N	1.2	mg/L	0.050	0.050	1.0
Nitrite as N	ND	mg/L	0.010	0.010	1.0
Method: 300.0		Date Analyzed: 02/19/2010 1710			
Chloride	160	mg/L	10	10	10
Method: L107-06-1B		Date Analy	yzed: 02/2	5/2010 1534	
Prep Method: Distill/Ammonia		Date Prep	ared: 02/2	5/2010 1105	
Ammonia	3.1	mg/L	0.10	0.10	1.0
Method: SM 2510B		Date Anal	yzed: 02/1	9/2010 1013	
Specific Conductance	700	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-ISCO-2-0.2

Lab Sample ID:

360-26898-2

Date Sampled:

02/18/2010 0900

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Ar	nalyzed: 02/1	9/2010 1426	
Aluminum	510	ug/L	39	100	1.0
Chromium	170	ug/L	1.3	5.0	1.0
Sodium	170000	ug/L	250	2000	1.0
Method: 6010B		Date A	nalyzed: 02/1	9/2010 1605	
Prep Method: 3010A		Date Pr	repared: 02/1	9/2010 0735	
Aluminum	3900	ug/L	39	100	1.0
Chromium	810 B	ug/L	1.3	5.0	1.0
Sodium	160000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-ISCO-2-0.2

Lab Sample ID:

360-26898-2

Date Sampled:

02/18/2010 0900

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Analy	yzed: 0	2/19/2010 1828	
Nitrate as N	0.94	mg/L	0.050	0.050	1.0
Nitrite as N	ND	mg/L	0.010	0.010	1.0
Method: 300.0		Date Anal	yzed: 0	2/19/2010 1844	
Sulfate	450	mg/L	20	20	10
Chloride	220	mg/L	10	10	10
Method: L107-06-1B		Date Anal	yzed: 0	2/25/2010 1536	
Prep Method: Distill/Ammonia		Date Prep			
Ammonia	72	mg/L	1.0	1.0	10
Method: SM 2510B		Date Anal	yzed: 0	2/19/2010 1000	
Specific Conductance	1700	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441 Job Number: 360-26898-1

Client Sample ID:

OC-SW-PZ-16RR-0.2

Lab Sample ID:

360-26898-3

Date Sampled:

02/18/2010 0930

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Ar	nalyzed:	02/19/2010 1435	
Aluminum	220	ug/L	39	100	1.0
Chromium	130	ug/L	1.3	5.0	1.0
Sodium	160000	ug/L	250	2000	1.0
Method: 6010B	8	Date Ar	nalyzed:	02/19/2010 1608	
Prep Method: 3010A		Date Pr	epared:	02/19/2010 0735	
Aluminum	5300	ug/L	39	100	1.0
Chromium	1200 B	ug/L	1.3	5.0	1.0
Sodium	160000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441 Job Number: 360-26898-1

Client Sample ID:

OC-SW-PZ-16RR-0.2

Lab Sample ID:

360-26898-3

Date Sampled:

02/18/2010 0930

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution	
Method: 300.0		Date Anal	yzed: (	02/19/2010 1930		
Nitrate as N	2.4	mg/L	0.050	0.050	1.0	
Nitrite as N	ND	mg/L	0.010	0.010	1.0	
Method: 300.0		Date Analy	yzed: (	02/19/2010 1945		
Sulfate	320	mg/L	20	20	10	
Chloride	240	mg/L	10	10	10	
Method: L107-06-1B		Date Analyzed: 02/25/2010 1537				
Prep Method: Distill/Ammonia		Date Prep	ared: (	02/25/2010 1105		
Ammonia	40	mg/L	1.0	1.0	10	
Method: SM 2510B		Date Anal	yzed: (	02/19/2010 1002		
Specific Conductance	1500	umhos/cm	1.0	1.0	1.0	

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-PZ-16RR-0.2-DUP

Lab Sample ID:

360-26898-4

Date Sampled:

02/18/2010 0930

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Ar	nalyzed: 02/1	9/2010 1438	
Aluminum	210	ug/L	39	100	1.0
Chromium	120	ug/L	1.3	5.0	1.0
Sodium	160000	ug/L	250	2000	1.0
Method: 6010B		Date Ar	nalyzed: 02/1	9/2010 1611	
Prep Method: 3010A		Date Pr	repared: 02/1	9/2010 0735	
Aluminum	4800	ug/L	39	100	1.0
Chromium	1100 B	ug/L	1.3	5.0	1.0
Sodium	160000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-PZ-16RR-0.2-DUP

Lab Sample ID:

360-26898-4

Date Sampled:

02/18/2010 0930

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/19/2010 2000	
Nitrate as N	2.4	mg/L	0.050	0.050	1.0
Method: 300.0		Date Anal	yzed:	02/19/2010 2015	
Sulfate	310	mg/L	20	20	10
Chloride	240	mg/L	10	10	10
Nitrite as N	ND	mg/L	0.10	0.10	10
Method: L107-06-1B		Date Anal	yzed:	02/25/2010 1540	
Prep Method: Distill/Ammonia		Date Prep	ared:	02/25/2010 1105	
Ammonia	43	mg/L	1.0	1.0	10
Method: SM 2510B		Date Anal	yzed:	02/19/2010 1003	
Specific Conductance	1500	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow

Job Number: 360-26898-1

Olin Corporation

3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-PZ-17RR-0.2

Lab Sample ID:

360-26898-5

Date Sampled:

02/18/2010 0950

Date Received:

02/18/2010 0950

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Ar	nalyzed: 02/	19/2010 1441	
Aluminum	130	ug/L	39	100	1.0
Chromium	83	ug/L	1.3	5.0	1.0
Sodium	150000	ug/L	250	2000	1.0
Method: 6010B		Date Ar	nalyzed: 02/	19/2010 1619	
Prep Method: 3010A		Date Pr	repared: 02/	19/2010 0735	
Aluminum	2600	ug/L	39	100	1.0
Chromium	630 B	ug/L	1.3	5.0	1.0
Sodium	140000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-PZ-17RR-0.2

Lab Sample ID:

360-26898-5

Date Sampled:

02/18/2010 0950

Date Received:

02/18/2010 0950

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	lyzed: 02/	19/2010 2028	
Nitrate as N	3.3	mg/L	0.050	0.050	1.0
Nitrite as N	ND	mg/L	0.010	0.010	1.0
Method: 300.0		Date Anal	lyzed: 02/	19/2010 2043	
Sulfate	210	mg/L	20	20	10
Chloride	230	mg/L	10	10	10
Method: L107-06-1B		Date Anal	lyzed: 02/2	25/2010 1541	
Prep Method: Distill/Ammonia		Date Prep	pared: 02/	25/2010 1105	
Ammonia	33	mg/L	0.50	0.50	5.0
Method: SM 2510B		Date Anal	lyzed: 02/	19/2010 1005	
Specific Conductance	1300	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-SD-17-0.2

Lab Sample ID:

360-26898-6

Date Sampled:

02/18/2010 1000

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Ar	nalyzed:	02/19/2010 1444	
Aluminum	150	ug/L	39	100	1.0
Chromium	60	ug/L	1.3	5.0	1.0
Sodium	150000 \( \tau^{-1} \)	ug/L	250	2000	1.0
Method: 6010B		Date Ar	nalyzed:	02/19/2010 1622	
Prep Method: 3010A		Date Pr	epared:	02/19/2010 0735	
Aluminum	4600	ug/L	39	100	1.0
Chromium	840 B	ug/L	1.3	5.0	1.0
Sodium	130000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-SD-17-0.2

Lab Sample ID:

360-26898-6

Date Sampled:

02/18/2010 1000

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed:	02/19/2010 2128	
Nitrate as N	3.6	mg/L	0.050	0.050	1.0
Method: 300.0		Date Anal	yzed:	02/19/2010 2143	
Sulfate	200	mg/L	20	20	10
Chloride	240	mg/L	10	10	10
Nitrite as N	ND	mg/L	0.10	0.10	10
Method: L107-06-1B		Date Anal	yzed:	02/25/2010 1542	
Prep Method: Distill/Ammonia		Date Prep	ared:	02/25/2010 1105	
Ammonia	48	mg/L	0.50	0.50	5.0
Method: SM 2510B		Date Anal	yzed:	02/19/2010 1006	
Specific Conductance	1300	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-PZ-18R-0.2

Lab Sample ID:

360-26898-7

Date Sampled:

02/18/2010 1035

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date A	nalyzed: 02/1	9/2010 1447	
Aluminum	120	ug/L	39	100	1.0
Chromium	20	ug/L	1.3	5.0	1.0
Sodium	130000	ug/L	250	2000	1.0
Method: 6010B		Date A	nalyzed: 02/1	9/2010 1625	
Prep Method: 3010A		Date Pi	repared: 02/1	9/2010 0735	
Aluminum	140	ug/L	39	100	1.0
Chromium	22 B	ug/L	1.3	5.0	1.0
Sodium	120000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-PZ-18R-0.2

Lab Sample ID:

360-26898-7

Date Sampled:

02/18/2010 1035

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed: 02/	19/2010 2159	
Sulfate	86	mg/L	2.0	2.0	1.0
Nitrate as N	0.69	mg/L	0.050	0.050	1.0
Nitrite as N	ND	mg/L	0.010	0.010	1.0
Method: 300.0		Date Anal	yzed: 02/	19/2010 2214	
Chloride	220	mg/L	10	10	10
Method: L107-06-1B		Date Anal	yzed: 02/	25/2010 1533	
Prep Method: Distill/Ammonia		Date Prep	ared: 02/	25/2010 1105	
Ammonia	16	mg/L	0.10	0.10	1.0
Method: SM 2510B		Date Anal	yzed: 02/	19/2010 1008	
Specific Conductance	950	umhos/cm	1.0	1.0	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-ISCO-1-0.2

Lab Sample ID:

360-26898-8

Date Sampled:

02/18/2010 1045

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: Dissolved-6010B		Date Ar	nalyzed:	02/19/2010 1449	
Aluminum	110	ug/L	39	100	1.0
Chromium	19	ug/L	1.3	5.0	1.0
Sodium	130000	ug/L	250	2000	1.0
Method: 6010B		Date Ar	nalyzed:	02/19/2010 1628	
Prep Method: 3010A		Date Pr	repared:	02/19/2010 0735	
Aluminum	130	ug/L	39	100	1.0
Chromium	20	ug/L	1.3	5.0	1.0
Sodium	110000	ug/L	250	2000	1.0

Mr. Steven Morrow Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Client Sample ID:

OC-SW-ISCO-1-0.2

Lab Sample ID:

360-26898-8

Date Sampled:

02/18/2010 1045

Date Received:

02/18/2010 1655

Client Matrix:

Analyte	Result/Qualifier	Unit	RL	RL	Dilution
Method: 300.0		Date Anal	yzed: 02/19	9/2010 2229	
Sulfate	80	mg/L	2.0	2.0	1.0
Nitrate as N	0.76	mg/L	0.050	0.050	1.0
Nitrite as N	ND	mg/L	0.010	0.010	1.0
Method: 300.0		Date Anal	yzed: 02/1	9/2010 2244	
Chloride	220	mg/L	10	10	10
Method: L107-06-1B		Date Anal	yzed: 02/2	5/2010 1534	
Prep Method: Distill/Ammonia		Date Prep	ared: 02/2	5/2010 1105	
Ammonia	14	mg/L	0.10	0.10	1.0
Method: SM 2510B		Date Anal	yzed: 02/1	9/2010 1009	
Specific Conductance	940	umhos/cm	1.0	1.0	1.0

## **DATA REPORTING QUALIFIERS**

Client: Olin Corporation Job Number: 360-26898-1

Lab Section	Qualifier	Description
Metals		
	В	Compound was found in the blank and sample.
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## **QUALITY CONTROL RESULTS**

Client: Olin Corporation Job Number: 360-26898-1

## **QC Association Summary**

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 360-55194					
_CS 360-55194/2-A	Lab Control Sample	Т	Water	3010A	
_CSD 360-55194/3-A	Lab Control Sample Duplicate	Т	Water	3010A	
MB 360-55194/1-A	Method Blank	Т	Water	3010A	
360-26898-1	OC-SW-ISCO-3-0.2	Т	Water	3010A	
60-26898-1DU	Duplicate	Т	Water	3010A	
60-26898-1MS	Matrix Spike	Т	Water	3010A	
60-26898-2	OC-SW-ISCO-2-0.2	Т	Water	3010A	
60-26898-3	OC-SW-PZ-16RR-0.2	Т	Water	3010A	
60-26898-4	OC-SW-PZ-16RR-0.2-DUP	Т	Water	3010A	
60-26898-5	OC-SW-PZ-17RR-0.2	Т	Water	3010A	
60-26898-6	OC-SW-SD-17-0.2	Т	Water	3010A	
360-26898-7	OC-SW-PZ-18R-0.2	T	Water	3010A	
60-26898-8	OC-SW-ISCO-1-0.2	Т	Water	3010A	
Analysis Batch:360-5524	40				
CS 360-55248/1	Lab Control Sample	Т	Water	6010B	
.CSD 360-55248/8	Lab Control Sample Duplicate	T	Water	6010B	
1B 360-55248/2	Method Blank	T	Water	6010B	
60-26898-1	OC-SW-ISCO-3-0.2	D	Water	6010B	
60-26898-1DU	Duplicate	D	Water	6010B	
60-26898-1MS	Matrix Spike	D	Water	6010B	
60-26898-2	OC-SW-ISCO-2-0.2	D	Water	6010B	
60-26898-3	OC-SW-PZ-16RR-0.2	D	Water	6010B	
60-26898-4	OC-SW-PZ-16RR-0.2-DUP	D	Water	6010B	
60-26898-5	OC-SW-PZ-17RR-0.2	D	Water	6010B	
60-26898-6	OC-SW-SD-17-0.2	D	Water	6010B	
60-26898-7	OC-SW-PZ-18R-0.2	D	Water	6010B	
360-26898-8	OC-SW-ISCO-1-0.2	D	Water	6010B	
Analysis Batch:360-5526		_		00405	
CS 360-55194/2-A	Lab Control Sample	T _	Water	6010B	360-55194
CSD 360-55194/3-A	Lab Control Sample Duplicate	T -	Water	6010B	360-55194
/IB 360-55194/1-A	Method Blank	T _	Water	6010B	360-55194
60-26898-1	OC-SW-ISCO-3-0.2	T -	Water	6010B	360-55194
60-26898-1DU	Duplicate	T _	Water	6010B	360-55194
60-26898-1MS	Matrix Spike	T _	Water	6010B	360-55194
60-26898-2	OC-SW-ISCO-2-0.2	T -	Water	6010B	360-55194
60-26898-3	OC-SW-PZ-16RR-0.2	T _	Water	6010B	360-55194
60-26898-4	OC-SW-PZ-16RR-0.2-DUP	Т	Water	6010B	360-55194
60-26898-5	OC-SW-PZ-17RR-0.2	Т	Water	6010B	360-55194
60-26898-6	OC-SW-SD-17-0.2	Т	Water	6010B	360-55194
60-26898-7	OC-SW-PZ-18R-0.2	Т	Water	6010B	360-55194
60-26898-8	OC-SW-ISCO-1-0.2	T	Water	6010B	360-55194

Client: Olin Corporation Job Number: 360-26898-1

## **QC Association Summary**

Report

Lab Sample ID Client Sample ID Basis Client Matrix Method Prep Batch

#### Report Basis

D = Dissolved

T = Total

Client: Olin Corporation Job Number: 360-26898-1

## **QC Association Summary**

		Report			
Lab Sample ID	Client Sample ID	Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-5522	0				
_CS 360-55220/1	Lab Control Sample	Т	Water	SM 2510B	
MB 360-55220/18	Method Blank	Т	Water	SM 2510B	
360-26898-1	OC-SW-ISCO-3-0.2	Т	Water	SM 2510B	
360-26898-1DU	Duplicate	Т	Water	SM 2510B	
360-26898-2	OC-SW-ISCO-2-0.2	T	Water	SM 2510B	
360-26898-3	OC-SW-PZ-16RR-0.2	T	Water	SM 2510B	
360-26898-4	OC-SW-PZ-16RR-0.2-DUP	T	Water	SM 2510B	
360-26898-5	OC-SW-PZ-17RR-0.2	Т	Water	SM 2510B	
360-26898-6	OC-SW-SD-17-0.2	Т	Water	SM 2510B	
360-26898-7	OC-SW-PZ-18R-0.2	Т	Water	SM 2510B	
360-26898-8	OC-SW-ISCO-1-0.2	T	Water	SM 2510B	
Analysis Batch:360-5527	9				
_CS 360-55279/4	Lab Control Sample	Т	Water	300.0	
MB 360-55279/3	Method Blank	Т	Water	300.0	
360-26898-1	OC-SW-ISCO-3-0.2	Т	Water	300.0	
Analysis Batch:360-5528	1				
_CS 360-55281/4	Lab Control Sample	Т	Water	300.0	
MB 360-55281/3	Method Blank	Т	Water	300.0	
360-26898-2	OC-SW-ISCO-2-0.2	Т	Water	300.0	
360-26898-2MS	Matrix Spike	Ť	Water	300.0	
360-26898-2MSD	Matrix Spike Duplicate	Ť	Water	300.0	
360-26898-3	OC-SW-PZ-16RR-0.2	Ť	Water	300.0	
360-26898-4	OC-SW-PZ-16RR-0.2-DUP	Ť	Water	300.0	
360-26898-5	OC-SW-PZ-17RR-0.2	Ť	Water	300.0	
360-26898-6	OC-SW-SD-17-0.2	T.	Water	300.0	
360-26898-7	OC-SW-PZ-18R-0.2	T	Water	300.0	
360-26898-8	OC-SW-ISCO-1-0.2	Ť	Water	300.0	
Analysis Batch:360-5528	2				
_CS 360-55282/4	Lab Control Sample	Т	Water	300.0	
MB 360-55282/3	Method Blank	T	Water	300.0	
360-26898-1	OC-SW-ISCO-3-0.2	T	Water	300.0	

Client: Olin Corporation Job Number: 360-26898-1

## **QC Association Summary**

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry	Chefit Cample ID		Onent Matrix	Metriou	r rep Baten
Analysis Batch:360-55283					
LCS 360-55283/4	Lab Control Sample	Т	Water	300.0	
MB 360-55283/3	Method Blank	T	Water	300.0	
360-26898-2	OC-SW-ISCO-2-0.2	Ť	Water	300.0	
360-26898-2MS	Matrix Spike	Т	Water	300.0	
360-26898-2MSD	Matrix Spike Duplicate	T	Water	300.0	
360-26898-3	OC-SW-PZ-16RR-0.2	Т	Water	300.0	
360-26898-4	OC-SW-PZ-16RR-0.2-DUP	Т	Water	300.0	
360-26898-5	OC-SW-PZ-17RR-0.2	Т	Water	300.0	
360-26898-6	OC-SW-SD-17-0.2	Т	Water	300.0	
360-26898-7	OC-SW-PZ-18R-0.2	Т	Water	300.0	
360-26898-8	OC-SW-ISCO-1-0.2	Т	Water	300.0	
Prep Batch: 360-55414					
LCS 360-55414/2-A	Lab Control Sample	Т	Water	Distill/Ammonia	
MB 360-55414/1-A	Method Blank	Т	Water	Distill/Ammonia	
360-26898-1	OC-SW-ISCO-3-0.2	Т	Water	Distill/Ammonia	
360-26898-2	OC-SW-ISCO-2-0.2	Т	Water	Distill/Ammonia	
360-26898-3	OC-SW-PZ-16RR-0.2	Т	Water	Distill/Ammonia	
360-26898-4	OC-SW-PZ-16RR-0.2-DUP	T	Water	Distill/Ammonia	
360-26898-5	OC-SW-PZ-17RR-0.2	Т	Water	Distill/Ammonia	
360-26898-6	OC-SW-SD-17-0.2	T	Water	Distill/Ammonia	
360-26898-7	OC-SW-PZ-18R-0.2	T	Water	Distill/Ammonia	
360-26898-8	OC-SW-ISCO-1-0.2	Т	Water	Distill/Ammonia	
Analysis Batch:360-55427					
LCS 360-55414/2-A	Lab Control Sample	Т	Water	L107-06-1B	360-55414
MB 360-55414/1-A	Method Blank	Т	Water	L107-06-1B	360-55414
360-26898-1	OC-SW-ISCO-3-0.2	Т	Water	L107-06-1B	360-55414
360-26898-2	OC-SW-ISCO-2-0.2	Т	Water	L107-06-1B	360-55414
360-26898-3	OC-SW-PZ-16RR-0.2	Т	Water	L107-06-1B	360-55414
360-26898-4	OC-SW-PZ-16RR-0.2-DUP	Т	Water	L107-06-1B	360-55414
360-26898-5	OC-SW-PZ-17RR-0.2	Т	Water	L107-06-1B	360-55414
360-26898-6	OC-SW-SD-17-0.2	Т	Water	L107-06-1B	360-55414
360-26898-7	OC-SW-PZ-18R-0.2	T	Water	L107-06-1B	360-55414
360-26898-8	OC-SW-ISCO-1-0.2	Т	Water	L107-06-1B	360-55414

#### Report Basis

T = Total

Client: Olin Corporation

Job Number: 360-26898-1

Method Blank - Batch: 360-55194

Method: 6010B Preparation: 3010A

Lab Sample ID: MB 360-55194/1-A Client Matrix:

Dilution:

Date Analyzed:

Date Prepared:

Water

02/19/2010 1536

02/19/2010 0735

1.0

Analysis Batch: 360-55263

Prep Batch: 360-55194

Units: ug/L

Lab File ID:

Instrument ID: Varian ICP N/A

Initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result	Qual	MDL	RL	
Aluminum	ND		39	100	******
Chromium	1.60	J	1.3	5.0	
Sodium	ND		250	5.0 2000	

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 360-55194

Method: 6010B Preparation: 3010A

LCS Lab Sample ID: LCS 360-55194/2-A

Analysis Batch: 360-55263

Instrument ID:

Varian ICP

Client Matrix:

Water

Dilution:

1.0

Prep Batch: 360-55194

Lab File ID: N/A

50 mL

Date Analyzed:

02/19/2010 1545

Units: ug/L

Initial Weight/Volume:

Date Prepared:

02/19/2010 0735

Final Weight/Volume:

50 mL

LCSD Lab Sample ID: LCSD 360-55194/3-A

Analysis Batch: 360-55263

Instrument ID:

Varian ICP

Client Matrix:

Water

Prep Batch: 360-55194

Lab File ID:

Dilution:

Units: ug/L

N/A Initial Weight/Volume:

50 mL

02/19/2010 1548

Final Weight/Volume:

50 mL

Date Analyzed: Date Prepared:

02/19/2010 0735

% Rec. RPD RPD Limit LCS Qual LCSD Qual LCS LCSD Limit Analyte 80 - 120 Aluminum 103 105 2 20 20 102 105 80 - 120 3 Chromium Sodium 101 103 80 - 120 2 20

Client: Olin Corporation Job Number: 360-26898-1

Matrix Spike - Batch: 360-55194 Method: 6010B Preparation: 3010A

Lab Sample ID: 360-26898-1 Analysis Batch: 360-55263 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: 360-55194 Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

 Dilution:
 1.0
 Units:
 ug/L
 Initial Weight/Volume:
 50 mL

 Date Analyzed:
 02/19/2010 1556
 Final Weight/Volume:
 50 mL

 Date Prepared:
 02/19/2010 0735
 Total Weight/Volume:
 50 mL

Analyte	Sample Result	/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	91	J	5000	5390	106	75 - 125	
Chromium	ND		1000	1050	105	75 - 125	
Sodium	77000		20000	97200	99	75 - 125	

Duplicate - Batch: 360-55194 Method: 6010B Preparation: 3010A

Lab Sample ID: 360-26898-1 Analysis Batch: 360-55263 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: 360-55194 Lab File ID: N/A

Dilution: 1.0 Units: ug/L Initial Weight/Volume: 50 mL

 Dilution:
 1.0
 Units:
 ug/L
 Initial Weight/Volume:
 50 mL

 Date Analyzed:
 02/19/2010 1553
 Final Weight/Volume:
 50 mL

 Date Prepared:
 02/19/2010 0735
 Total Weight/Volume:
 50 mL

**RPD** Qual Analyte Sample Result/Qual Result Limit Aluminum 91 92.3 2 20 Chromium ND ND NC 20 77000 78000 Sodium 20

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55248 Method: 6010B Preparation: N/A

Lab Sample ID: MB 360-55248/2 Analysis Batch: 360-55248 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A Dilution: 1.0 Units: ug/L Initial Weight/Volume:

02/19/2010 1357 Date Analyzed: Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte	Result	Qual	MDL	RL
Aluminum	ND		39	100
Chromium	ND		1.3	5.0
Sodium	ND		250	2000

Method: 6010B Lab Control Sample/ Preparation: N/A Lab Control Sample Duplicate Recovery Report - Batch: 360-55248

Instrument ID: LCS Lab Sample ID: LCS 360-55248/1 Analysis Batch: 360-55248 Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A Dilution: 1.0 Units: ug/L Initial Weight/Volume:

02/19/2010 1353 Date Analyzed: Final Weight/Volume: 10 mL

Date Prepared: N/A

LCSD Lab Sample ID: LCSD 360-55248/8 Analysis Batch: 360-55248 Instrument ID: Varian ICP

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A Dilution: 1.0 Units: ug/L Initial Weight/Volume:

02/19/2010 1429 Date Analyzed: Final Weight/Volume: 10 mL

Date Prepared: N/A

% Rec. LCS RPD Analyte LCSD Limit RPD Limit LCS Qual LCSD Qual Aluminum 100 97 80 - 120 3 20 Chromium 99 80 - 120 3 20 97 Sodium 100 97 80 - 120 3 20

Client: Olin Corporation Job Number: 360-26898-1

Matrix Spike - Batch: 360-55248 Method: 6010B Preparation: N/A

·

Lab Sample ID:360-26898-1Analysis Batch:360-55248Instrument ID:Varian ICPClient Matrix:WaterPrep Batch: N/ALab File ID:N/ADilution:1.0Units: ug/LInitial Weight/Volume:

Date Analyzed: 02/19/2010 1421 Final Weight/Volume: 10 mL

Date Prepared: N/A

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	ND	5000	5170	103	75 - 125	
Chromium	ND	1000	998	100	75 - 125	
Sodium	81000	20000	97400	82	75 - 125	4

Duplicate - Batch: 360-55248 Method: 6010B Preparation: N/A

Lab Sample ID: 360-26898-1 Analysis Batch: 360-55248 Instrument ID: Varian ICP
Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: ug/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1418 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Aluminum	ND	ND	NC	20	
Chromium	ND	ND	NC	20	
Sodium	81000	81000	0	20	

1.0 mL

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55279 Method: 300.0 Preparation: N/A

Lab Sample ID: Analysis Batch: 360-55279 MB 360-55279/3 Instrument ID: No Equipment Assigned Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL Date Analyzed: 02/19/2010 1122 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Result RL RL Analyte Qual Nitrate as N ND 0.050 0.050 Nitrite as N ND 0.010 0.010

Lab Control Sample - Batch: 360-55279 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-55279/4 Analysis Batch: 360-55279 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID:

Dilution: Units: mg/L Initial Weight/Volume: 1.0

Date Analyzed: 02/19/2010 1137 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit Qual Nitrate as N 4.00 85 - 115 4.09 102 Nitrite as N 4.00 85 - 115 4.05 101

1.0 mL

1.0 mL

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55281 Method: 300.0

Preparation: N/A

Lab Sample ID: MB 360-55281/3 Analysis Batch: 360-55281 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1756 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

 Analyte
 Result
 Qual
 RL
 RL

 Nitrate as N
 ND
 0.050
 0.050

 Nitrite as N
 ND
 0.010
 0.010

Lab Control Sample - Batch: 360-55281 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-55281/4 Analysis Batch: 360-55281 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1811 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit Qual Nitrate as N 4.00 85 - 115 4.19 105 Nitrite as N 4.00 85 - 115 4.02 100

No Equipment Assigned

Instrument ID:

Client: Olin Corporation Job Number: 360-26898-1

Matrix Spike/ Method: 300.0 Matrix Spike Duplicate Recovery Report - Batch: 360-55281 Preparation: N/A

Client Matrix: Water Prep Batch: N/A Lab File ID:

Dilution: 10 Initial Weight/Volume: 1.0 mL 02/19/2010 1859 Final Weight/Volume: Date Analyzed: 10 mL

Analysis Batch: 360-55281

Date Prepared: N/A

MSD Lab Sample ID: 360-26898-2 Analysis Batch: 360-55281 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID:

Dilution: 10 Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/19/2010 1915 Final Weight/Volume: 10 mL Date Prepared:

% Rec. RPD Analyte MS MSD Limit **RPD Limit** MS Qual MSD Qual Nitrate as N 75 - 125 114 20 113 1 Nitrite as N 99 99 75 - 125 0 20

MS Lab Sample ID:

360-26898-2

N/A

No Equipment Assigned

1.0 mL

Instrument ID:

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55282 Method: 300.0 Preparation: N/A

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1122 Final Weight/Volume: 1.0 mL

Analysis Batch: 360-55282

Date Prepared: N/A

 Analyte
 Result
 Qual
 RL
 RL

 Sulfate
 ND
 2.0
 2.0

 Chloride
 ND
 1.0
 1.0

Lab Control Sample - Batch: 360-55282 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-55282/4 Analysis Batch: 360-55282 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/19/2010 1137 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Lab Sample ID:

MB 360-55282/3

Analyte Spike Amount Result % Rec. Limit Qual 80.0 85 - 115 Sulfate 82.3 103 40.0 85 - 115 Chloride 40.1 100

1.0 mL

Qual

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55283 Method: 300.0 Preparation: N/A

. ropulation in

Lab Sample ID: MB 360-55283/3 Analysis Batch: 360-55283 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL Date Analyzed: 02/19/2010 1756 Final Weight/Volume: 1.0 mL

Date Analyzed: 02/19/2010 1/56 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

 Analyte
 Result
 Qual
 RL
 RL

 Sulfate
 ND
 2.0
 2.0

 Chloride
 ND
 1.0
 1.0

Lab Control Sample - Batch: 360-55283 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-55283/4 Analysis Batch: 360-55283 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume:

Date Analyzed: 02/19/2010 1811 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

Analyte Spike Amount Result % Rec. Limit

 Sulfate
 80.0
 82.9
 104
 85 - 115

 Chloride
 40.0
 40.4
 101
 85 - 115

No Equipment Assigned

Instrument ID:

Client: Olin Corporation Job Number: 360-26898-1

Matrix Spike/ Method: 300.0 Matrix Spike Duplicate Recovery Report - Batch: 360-55283 Preparation: N/A

Analysis Batch: 360-55283

Client Matrix: Water Prep Batch: N/A Lab File ID:

Dilution:

10 Initial Weight/Volume: 1.0 mL 02/19/2010 1859 Final Weight/Volume: Date Analyzed: 10 mL

Date Prepared: N/A

MSD Lab Sample ID: 360-26898-2 Analysis Batch: 360-55283 Instrument ID: No Equipment Assigned

Client Matrix: Water Lab File ID:

Prep Batch: N/A

Dilution: 10 Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/19/2010 1915 Final Weight/Volume: 10 mL Date Prepared: N/A

% Rec. RPD Analyte MS MSD Limit **RPD Limit** MS Qual MSD Qual Sulfate 75 - 125 99 99 20 0 Chloride 98 98 75 - 125 0 20

MS Lab Sample ID:

360-26898-2

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55414 Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID: MB 360-55414/1-A Analysis Batch: 360-55427 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: 360-55414 Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/25/2010 1517 Final Weight/Volume: 50 mL

Date Analyzed: 02/25/2010 1517 Final Weight/Volume: 50 mL

Date Prepared: 02/25/2010 1105

Analyte Result Qual RL RL
Ammonia ND 0.10 0.10

Lab Control Sample - Batch: 360-55414 Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID: LCS 360-55414/2-A Analysis Batch: 360-55427 Instrument ID: No Equipment Assigned

Client Matrix: Water Prep Batch: 360-55414 Lab File ID: N/A

Dilution: 1.0 Units: mg/L Initial Weight/Volume: 1.0 mL

Date Analyzed: 02/25/2010 1518 Final Weight/Volume: 50 mL

Date Prepared: 02/25/2010 1105

Analyte Spike Amount Result % Rec. Limit Qual
Ammonia 10.0 10.2 102 85 - 115

Qual

Client: Olin Corporation Job Number: 360-26898-1

Method Blank - Batch: 360-55220 Method: SM 2510B

Preparation: N/A

Lab Sample ID: MB 360-55220/18 Analysis Batch: 360-55220 Instrument ID: Autotitrator

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: umhos/cm Initial Weight/Volume:

Date Analyzed: 02/19/2010 1012 Final Weight/Volume: 1.0 mL Date Prepared: N/A

Analyte Result Qual RL RL
Specific Conductance ND 1.0 1.0

Lab Control Sample - Batch: 360-55220 Method: SM 2510B

Preparation: N/A

Lab Sample ID: LCS 360-55220/1 Analysis Batch: 360-55220 Instrument ID: Autotitrator Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Units: umhos/cm Initial Weight/Volume:

Date Analyzed: 02/19/2010 0912 Final Weight/Volume: 1.0 mL

Date Prepared: N/A

N/A

Analyte Spike Amount Result % Rec. Limit

Specific Conductance 1410 1410 100 85 - 115

Duplicate - Batch: 360-55220 Method: SM 2510B Preparation: N/A

700

Lab Sample ID: 360-26898-1 Analysis Batch: 360-55220 Instrument ID: Autotitrator

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A
Dilution: 1.0 Units: umhos/cm Initial Weight/Volume:

Date Analyzed: 02/19/2010 0958 Final Weight/Volume: 1.0 mL

Analyte Sample Result/Qual Result RPD Limit Qual

701

1

20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Date Prepared:

Specific Conductance

## State Accreditation Matrix

	State Accr	editation Mat								
		State where Primary Accreditation is Carried								
Made al Nessa	Description	New York (NELAC)	Mass	Conn	Florida (NELAC)	North Carolina				
Method Name 821-R-02-012	Description  Toxicity, Acute (48-Hour)(list upon request)	(NELAC)	IVIdSS	Conn	(NELAC) NP	North Carolina				
SM 4500 CI F	Chlorine, Residual		NP	-	INI					
SM 9215B	Heterotrophic Plate Count (Pour Plate Method)		P							
SM 9215E	Heterotrophic Plate Count (Four Plate Method)		Р							
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)		P							
SM 9222B	Coliforms, Total (Membrane Filter)		P							
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP							
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P							
200.8	Metals (ICP/MS) (list upon request)	NP/P	NP/P	NP/P						
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P	NP/P						
6010B	Metals (ICP)(list upon request)	NP/SW		NP/SW						
245.1	Mercury (CVAA)	NP/P	NP	NP/P						
7470A	Mercury (CVAA)	NP		NP						
7471A	Mercury (CVAA)	SW		SW						
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP	NP/P						
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P		NP/P						
3010A	Preparation, Total Metals	NP/P		NP/P						
3020A	Preparation, Total Metals	NP/P/SW		NP/P/SW		1				
3050B	Preparation, Metals	SW		SW		1				
504.1	EDB, DBCP and 1,2,3-TCP (GC)		Р	Р		1				
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	NP		1				
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP		NP						
3546	Microwave Extraction	SW								
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		NP						
3540C	Soxhlet Extraction									
3550B	Ultrasonic Extraction	SW		SW						
600/4-81-045	Polychlorinated Biphenyls (PCBs) (GC)		NP	NP						
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW		NP/SW						
8082A	PCBs by Gas Chromatography(list upon request)	NP/SW		NP/SW						
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		NP/SW						
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW						
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)			NP/SW		NP/SW				
524.2	Volatile Org Comp (GC/MS)(list upon request)	Р	Р	Р						
524.2	Trihalomethanes		Р	Р						
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	NP						
5035	Closed System Purge and Trap	SW		SW						
5030B	Purge and Trap	NP		NP						
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		NP/SW						
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			NP/SW		NP/SW				
180.1	Turbidity, Nephelometric		Р	Р						
300	Anions, Ion Chromatography	NP/P	NP/P	NP/P						
410.4	COD	NP	NP	NP						
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		SW						
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	NP						
7196A	Chromium, Hexavalent	NP/SW		NP/SW						
9012A	Cyanide, Total and/or Amenable	NP/SW		NP/SW						
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		NP						
9040B	рН	NP		NP						
9045C	pH	SW		SW						
L107041C	Nitrogen, Nitrate	NP	Р	NP/P						
L107-06-1B	Nitrogen Ammonia	NP	NP	NP/P						
L204001A CN	Cyanide, Total		NP/P	NP/P						
L210-001A	Phenolics, Total Recoverable	NP	NP	NP						
SM 2320B	Alkalinity	NP/P	NP/P	NP/P						
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	NP/P						
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	NP/P		1				
SM 2540D	Solids, Total Suspended (TSS)	NP	NP	NP						
SM 3500 CR D	Chromium, Hexavalent	NP		NP						
SM 4500 H+ B	pH	NP/P	NP/P	NP/P						
SM 4500 NO2 B	Nitrogen, Nitrite	NP	Р	NP/P						
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP	NP/P						
SM 4500 P E	Phosphorus, Total	NP	NP	NP						
SM 4500 S2 D	Sulfide, Total	NP		NP						
SM 5210B	BOD, 5-Day	NP	NP	NP						
SM 5310B	Organic Carbon, Total (TOC)	NP	NP	NP/P	<u></u>	1				

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is listing is subject to change based on the laboratories current certification standing.

## **Login Sample Receipt Check List**

Client: Olin Corporation Job Number: 360-26898-1

Login Number: 26898 List Source: TestAmerica Westfield

Creator: Rinard, Kimberley A

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

# TestAmerica Laboratories, Inc. Chain of Custody Form

Test/America

\$53 Southampton Road
 Westfield, MA 01085
 (P) 413-572-4000
 (F) 413-572-3707

	Method of shipment:	Relinquished by: 1/2/18//	Relinquished by:  Dax of Chopmon 2/18(10	Sampled by (print):		2/2/200	) is	OC-5W-15CO-1-0,2 SW MAH 2-18-19	OC-5W-PZ-18R-0.2 SW MAN 2-18-10	00:01 HAM MS 2:0- 11-05-05-00		OC- SW- PZ-16 PP-P-PSW MAN 9:30	SE TAN	۽ نتہ	00-5m-18c0-3-0" 2m WAH 8:45	Sample ID  Sample Type Sample Time Sample Time Collected	ample Type Codes  WV-Wastewater DW-Drinking water SW-Surfacewater  W-Labwater GW-Groundwater A-Air  W-Labwater GW-Groundwater A-Air  Solid / Soil SL-Sludge O-Oil Z-Other	other 48 hrs 5 Day Other	24 hrs 72 hrs	Requested Lurn Around Time  Requested: NPDES	Fax:	Wilmington, MA 01887	ddress: 51 Eames Street Project	Client: Olin Chemical/MACTEC
and existing the	1655 TéstAmerica-Westfield	1520 Received by:	Mark Market	Signatura	Character.	X C		X          -	у	X X X X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X X X X		X	x x x x x	<b>1</b>	Grab Comp. # Contain Plastic(P) NaHSO4 HNO3 to H2SO4 to HCI to ph NaOH to NAOH/ZI None / 4 Ammonia Chloride, Specific ( Nitrate, N Diss Al/Cr	or Glass(G) /MeOH pH <2 p pH <2 pH >1 VAC 4° C a-Nitrogen Sulfate Condutivity	B B	MWRA Smart Rpt	Drinking Water DEP Form(s)	Contact: David Chapman  Classification / Special Report Format	Work ID: Surface Water Check and analytic		Project #: 6107-09-0016-04
1835	By: Who Date: 2/18/2016			Cooler (9) I N Se				X	X	ID Change made		48				Tot. Al/Cri Other	Na by 6010E	3	Use comments section to further define.	600-series for waste water 8000-series for haz/solid waste	example: IVICH Case Hall alive 500-series for drinking water	Check analysis and specify method and analytes in comments section.	Analysis Requested (Special Instructions)	roffice use

Version 1.2, Nov 2002

# OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

Reviewer/Date	Tige	Cunn	ingham		22/10
Sr. Review/Date	Chris	& Ric	andr.	c/25	10
Lab Report #	360	-20	898-	r <sup>k</sup>	l
Project #	n In D	ano		2	

1.0	Laboratory Deliverable Requirements
	1.1 Laboratory Information: Was all of the following provided in the laboratory report? Yes No NA Comments:
	Name of Laboratory  Address  Project ID Phone # Sample identification – Field and Laboratory
	Name of Laboratory Address Project ID Phone # Sample identification – Field and Laboratory  Client Information: Name Address Client Contact (IDs must be cross-referenced)
ACTIO	ON: If no, contact lab for submission of missing or illegible information.
	1.2 Laboratory Report Certification Statement  Yes [ No [ ] N/A [ ] Comments:
Does t	he laboratory report include a completed Analytical Report Certification in the required format?
ACTIO	N: If no, contact lab for submission of missing certification or certification with correct format.
	1.3 Laboratory Case Narrative: Yes [ No [ N/A [ Comments:
	Narrative serves as an exception report for the project and method QA/QC performance.  Narrative includes an explanation of each discrepancy on the
	Certification Statement.
ACTIO	DN: If no, contact lab for submission of missing or illegible information.
	1.4 Chain of Custody (COC) copy present with all documentation completed  Yes No NA Comments:
	NOTE: Olin receives and maintains the <i>original COC</i> .
ACTIO	ON: If no, contact lab for submission of copy of completed COC.

	1.5 Sample	Receipt	Information	(Cooler Red	eipt Form	present?):		Yes [	No [_]	N/A []	Comments:	
	Were each o into the labor		lowing tasks	completed an	d recorded t	upon receipt of the s	sample(s)					
Sam	ple temperature	confirm	ed: must be 1	° – 10° C. (If	samples wer	e sent by courier and	delivered o	on the same	day as colle	ction, tempera	ture requirement does not	apply).
Cont	ainer type note	d 🗹 san	nple condition	observed 🗹	pH verified	(where applicable) l	Field an	d lab IDs cro	oss referenc	ed		
ACTIC	N: If no, cont	act lab fo	or submission	of missing or	incomplete o	locumentation.						
	1.5.1	Were a	all samples de	livered to the	laboratory w	rithout breakage?		Yes 🔟	No [_]	N/A []	Comments:	
	1.5.2	with sa	the Cooler Remple receipt, astances affect	condition of t	he samples,	ative indicate other panalytical problems of	problems or special	Yes []	No 🗹	N/A [_]	Comments:	
	1.6 Sample laborator	Results	Section: Wa for each samp	ns each of th nle?	e following	requirements supplie	ed in the	Yes [	No [_]	N/A []	Comments:	
Fie Clea	eld ID and Lab an-up method	N/A)	☑ Date ar ☑ Analysis ☑ Target anal	od time collect method ytes and conc	ted entrations	Analyst Initials  Preparation me	ethod ⊡∕Unit		reparation/	extraction/dige	moisture or solids $V/A$ estion clean-up and analys	Reporting limits, where application
ACTIO	ON: If no, con	tact lab fo	or submission	of missing or	incomplete	information.						
			nation: Was each sample b		following	information supplied	d in the	Yes [V]	No [_]	N/A []	Comments:	

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/		/					·	
☑ Metl	od blank	results  LCS recoverie	es MS/MSD recoveries and RP	Ds ☑ Laboratory	duplicate res	sults (where	applicable)	
ACTIO	N: If no,	contact lab for submission	of missing or incomplete information	La				
2.0	<u>Holding</u>	<u> Times</u>					/	
Have ar		d? Holding time for metals	ned from date of collection to date is 180 days from sample collection t		Yes [_]	No 🗹	N/A]	Comments:
NOTE:	List samp	les that exceed hold time w	rith # of days exceeded on checklist					
ACTIO		시간 (1985)	sceeded, qualify all positive results (ing time) reject (R) all non-detect resu					
3.0	Labora	tory Method				_		
	3.1	Was the correct laborate	ory method used?		Yes 🔽	No [_]	N/A []	Comments:
		Water Digestion Soil Digestion Metals	3005A or 3010A or 3020A 3050B 6010B or 200.7					
comp	ared to	no, contact laborator the requested method. C variance.	y to provide justification for ontact senior chemist to inform	method change Client of change				
	3.2	Are the practical quant  ☑ SOW □ QAP	itation limits the same as those	specified by the	Yes 🔽	No [_]	N/A []	Comments:
NOT	E: Verify	that the reported metals ma	tch the target list specified on the CO	C.				

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			14			
		If no, evaluate variation with respect to sample matrix, preparation, dilution, tc. If sample PQL is indeterminate, contact lab for explanation.				
	3.3	Are results present for each sample in the SDG?	Yes 🔼	No []	N/A []	Comments:
ACTI	ON: If n	to, check Request for Analysis to verify if method was ordered and COC to verify that it		6		
	3.4	If dilutions were required, were dilution factors reported?	Yes 🔄	No []	N/A []	Comments:
ACTI	ON: If n	o, contact the lab for submission.	8/			
4.0	Metl	nod Blanks				
	4.1	Is the Method Blank Summary present?	Yes [V	No [_]	N/A []	Comments:
AC'	TION:	If no, call the laboratory for submission of missing data.		,		
	4.2	Frequency of Analysis: Was a method blank analyzed for each digestion batch of < 20 field samples?	Yes 🗹	No [_]	N/A []	Comments:
		If no, contact laboratory for justification. Consult senior chemist for action rrate non-compliance.				
	4.3	Is the method blank less than the PQLs for all target elements?	Yes [1/	No[]	N/A [ ]	Comments:
	TE: MA nples	ADEP requires the method blank to be matrix matched and digested with the		,		
	4.4 the fo	Do any method blanks have positive results for metals? Qualify data according to bllowing:	Yes [ ]			Comments:
					Chromic	im 1.6 m/L x5= 8 mg/L
6010.	doc	4 of 10			No co	Aromion hits >8 mg/L
					No A	hromium hits \$8 mg/L tion needed

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at	t the
PQL or the concentration reported if greater than the PQL.	

If the sample concentration is  $> 5 \times$  blank value, no qualification is needed.

ACTION: For any blank with positive results, list all contaminants for each method blank including the concentration detected and the flagging level (flagging level

= 5x th	blank value) and the associated samples and qualifiers.	J		
5.0	Laboratory Control Standard	.=		
	5.1 Was a laboratory control standard run with each analytical batch of 20 samples or less?	Yes 🔼	No [] N/A []	Comments:
ACT	E: A <u>full</u> target, second source LCS is required by MADEP.  ON: Call laboratory for LCS form submittal. If data are not available, use sional judgement to evaluate data accuracy associated with that batch.			£
	5.2 Is a LCS Summary Form present?	Yes 🗾	No No N/A	Comments:
ACT	ON: If no, contact lab for resubmission of missing data.			
within	Sample Type  MADEP  Sample Type  80-120  Soil  Within Lab generated limits  ON: If recovery is above the upper limit, qualify all positive sample results at the batch as (J). If recovery is below the lower limit, qualify all positive and etects results within the batch as (J). If LCS recovery is <30%, positive and non-results are rejected (R).	Yes [_]	No N/A	Comments:
				Comments:

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#### **Matrix Spikes** 6.0

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

6.1 spiked.

Were project-specific MS/MSDs collected? List project samples that were

ACTION: If no, contact senior chemist to see if any were specified.

Is the Matrix Spike/Matrix Spike Duplicate Recovery Form present? 6.2

OC-SW-ISCO-3-0.2 was spiked as a Yes No NA Comments: Batch QC Sample

Yes [ ] No [ N/A [] Comments: However sample

NOTE: A full target, second source MS/MSD is required by MADEP.

ACTION: If any matrix spike data are missing, call lab for resubmission.

Were matrix spikes analyzed as indicated on the COC and project 6.3 schedule?

Yes [ ] No [ ] N/A [ Comments:

ACTION: If any matrix spike data are missing, call lab for resubmission. If none, no qualification is needed. Narrate non-compliance.

Are any metal spike recoveries outside of the QC limits? 6.4

		1		(30)
Yes []	No 🗹	N/A [	_1	Comments:

**NOTE**: 
$$%R = (SSR-SR) \times 100\%$$

SA = Spike added

NOTE: If dilutions are required due to high sample concentrations (> 4X spike), the data are evaluated, but no flags are applied.

NOTE: If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags. ACTION: MS/MSD flags only apply to the sample spiked. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit, qualify positive results and non-detects (J). Are any RPDs for MS/MSD recoveries outside of the QC limits? Where: S = MS sample result D = MSD sample result **NOTE**: RPD = S-D x 100% (S+D)/2NOTE: If dilutions are required due to high sample concentrations, the data are evaluated, but no flags are applied. ACTION: If the RPD exceeds the control limit, qualify positive results and non-detects (J). 7.0 **Laboratory Duplicate** 7.1 Was a laboratory duplicate sample analyzed? If so, is the Laboratory Yes [ V No [ ] **Duplicate Sample Form present?** NOTE: MADEP refers to this sample as a "matrix duplicate". ACTION: If not analyzed, qualification is not needed. If data is missing, contact laboratory for resubmission of report. Narrate non-compliance.

7.2 Is the RPD between the result for the laboratory duplicate sample and the

result for the parent sample outside of the QA/QC limits?

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MADEP Laboratory Duplicate Sample RPD Criteria:	QAPP RPD
For aqueous results > $5 \times RL$ , RPD must be $\pm 20\%$	20
For aqueous results < 5× RL, RPD must be ≤ RL	20
For soil/sediment results > $5 \times RL$ , RPD must be $\pm 35\%$	20
For soil/sediment results $< 5 \times RL$ , RPD must be $\leq 2 \times RL$	20

**ACTION**: If the RPD exceeds the limits, qualify both positive results and non-detects as estimated and flag them J. Narrate non-compliance

## 8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

- **8.1** Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist.
- **8.2** Do any rinsate blanks have positive results?

NOTE: MADEP does not require the collection of rinsate blanks.

**ACTION:** Evaluate rinsate results against blank results to determine if contaminant may be laboratory-derived. If results are not lab-related, qualify according to below.

If the sample concentration is  $< 5 \times$  blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is  $> 5 \times$  blank value, no qualification is needed.

## 9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates.



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	<b>9.2</b> Were	field duplicates collec	ted per the required frequency	?	Yes [	No [_]	N/A []	Comments:		
SO	W □ QA	APP (1 per 10) □ MA	DEP Option 1 (1 per 20) 🛭 N	AADEP Option 3 (1 per 10) [	7					
		the RPD $\leq$ 50% for this review.	soils or waters? Calculate th	ne RPD for all results and	Yes 🗹	No [_]	N/A []	Comments:		
CTI	ON: RPD	must be ≤50% for s	oil and water. Qualify data	(J) for both sample results	if the RPD	exceeds 50	%.			
0.0	Special	QA/QC				/				
	10.1 W	Vere both total and dimetal concentration	dissolved metals analysin should not exceed that of	s performed? If so, the the total metal.	Yes 1	No []	N/A []	Comments:		
conc	entration i	s 10% higher than t	all and dissolved are $\geq 5x$ the total, flag both results as than $5x$ the PQL and the (J)	estimated (J). If total and	53	Dis	ssolved	results	were	
			0 1			hig her	- in a	i Subset	of sampl	es
			the disso	in results in lived fraction i	Nere				er the d	
			> 10%	of the concent	vation	CONC	en trak	on was	£ 10%	higher
			reforted	in the total	faction.	Lar +	han +6	e total	TC	
			Sample	5: OC-5W-SD	-17-0.	26 3		<i>c</i> )	. 7 2	
010.d	loc			5: OC-5w-5D OC-5W-I 9 of 10	500-1-	0.2	Sodi	um (I) e Total : dis	stimated from	ction

## 10.0 Application of Validation Qualifiers

Was any of the data qualified?

Yes No N/A Comments:

· for total/dissolved Concentrations > 10%

If so, apply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in database.

## REFERENCES

- LAW, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental Services, Kennesaw, GA 30144. August 1999
- U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance and Quality Control (OA/OC) Requirements." BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance and Quality Control Guidelines for Sampling, Data Evaluation and Reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.

Version 3, October 2008

## OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST WET CHEMISTRY PARAMETERS BY VARIOUS METHODS

Reviewer/Date_	Tige Couninghy-	4/22/10
Sr. Review/Date	Chris Ricardi	6/25/10
Lab Report # 3	60-26898-1	1 7
Project # GL	071000 16-12	

Note: The following analyses will be evaluated according to the "MADEP QA/QC Guidelines for Sampling, Data Evaluation and Reporting Activities." MADEP, however, may not list QA/QC criteria for every chemical analysis. Where not defined by MADEP, criteria will default to values stipulated in the QAPP. Where the QAPP does not define criteria, QA/QC requirements will default to limits employed by the laboratory.

	not define criteria, QA/QC requirements will default to limits employed by the laboratory.	
1.0	Laboratory Deliverable Requirements	
	<b>1.1 Laboratory Information</b> : Was all of the following provided in the laboratory report? Check items received.	Yes No No N/A Comments:
	☑ Name of Laboratory ☑ Address ☑ Project ID ☑ Phone #	Sample identification – Field and Laboratory
	☐ Name of Laboratory ☐ Address ☐ Project ID ☐ Phone #  Client Information: ☐ Name ☐ Address ☐ Client Contact	(IDs must be cross-referenced)
ACTIO	ON: If no, contact lab for submission of missing or illegible information.	
	1.2 Laboratory Report Certification Statement	Yes No No NA Comments:
	Does the laboratory report include a completed Analytical Report Certification in the	required format?
ACTIO	N: If no, contact lab for submission of missing certification or certification with correct	
	1.3 Laboratory Case Narrative:	Yes [ No [ N/A [ Comments:
	Narrative serves as an exception report for the project and method QA/QC performance	Narrative includes an explanation of each discrepancy on the Certification Statement.
ACTIO	N: If no, contact lab for submission of missing or illegible information.	
	1.4 Chain of Custody (COC) copy present with all documentation completed?	Yes No No N/A Comments:
	Does the laboratory report include copies of Chain of Custody forms containing all samples in	n this SDG?
	NOTE: Olin receives and maintains the <i>original</i> COC.	
ACTIC	N: If no, contact lab for submission of copy of missing completed COC.	
	1.5 Sample Receipt Information (Cooler Receipt Form): Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?	

	Yes L	No [_]	N/A [_]	Comments:
Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered of	n the same da	ay as collecti	on, temperatu	e requirement does not apply).
Container type noted Condition observed pH verified (where applicable) Field and lab II	Os cross refer	enced		
ACTION: If no, contact lab for submission of missing or incomplete documentation.  1.5.1 Were the correct bottles and preservatives used?  Ammonia,— 1 Liter polyethylene/H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C  Oil & Grease — 1 Liter glass/HCL or H2SO4 to pH<2,cool to 4°C  Alkalinity — 1 Liter polyethylene/cool to 4°C	Yes li	No [_]	N/A [_]	Comments:
Chemical Oxygen Demand – 50 mL polyethylene/H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C Nitrate/nitrite - H2SO <sub>4</sub> to pH<2,cool to 4°C Organic Carbon – 500 mL amber glass bottle/HCl or H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C				
Phenolics - H <sub>2</sub> SO <sub>4</sub> to pH<2,cool to 4°C  Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C				
<b>ACTION:</b> If no, inform senior chemist. Document justification for change in container/volume (if applicable), qualify positive and non-detect data (J) data if cooler temperature exceeds 10°C. Rejection of data requires professional judgment				
1.5.2 Were all samples delivered to the laboratory without breakage?	Yes [✓]	No []	N/A []	Comments:
1.5.3 Does the <i>Cooler Receipt Form</i> or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?	Yes []	No 🗹	N/A []	Comments:

1.6 Sample Results Section: Was the for report for each sample?	ollowing information supplied in the I	aboratory Yes Mo Mo	N/A []	Comments:	<u>~</u>
Field ID and Lab ID  Clean-up method N/A  Date and time co	llected ☑ Analyst Initials ☑ Preparation method	Dilution Factor Date of preparation/extraction/	digestion clea	pisture or solids MA	Reporting limi licable
☐ Matrix ☐ Target analytes and	concentrations	Units (soils must be reported in	n dry weight)		
ACTION: If no, contact lab for submission of missi	ng or incomplete information.				
1.7 QA/QC Information: Was the following for each sample batch?	ng information provided in the laborate	ory report Yes No No	N/A []	Comments:	
Method blank results	MS/MSD recoveries and RPDs	aboratory duplicate results (where a	oplicable)		
ACTION: If no, contact lab for submission of missing	g or incomplete information.				
2.0 Holding Times		Yes No No	N/A]	Comments:	
Have any technical holding times, determine	ed from date of collection to date of a	analysis, been exceeded? The hold	ing times are	as follows:	
28 days = ammonia, chemical oxyger					
Alkalinity = 14 days	Sulfide, TDS, TSS = 7 days	pH = analyze immediately		nitrogen as N = 48 hrs	
Nitrite nitrogen as $N = 48$ hrs	Nitrate + Nitrite as N = 28 days	* The state of the			
NOTE: List samples that exceed hold time	with # of days exceeded on checklist				
ACTION: If technical holding times are exceeded judgment used to qualify soils.		s that are grossly exceeded (>2X h	old time) rej	ect (R) all non-detect results.	Professional
3.0 Laboratory Method		Yes Mo No	N/A []	Comments:	
3.1 Was the correct laboratory method used			ş.i		
ACTION: If no, contact lab to provide justification f	or method change compared to the requ	uested method. Contact senior chem	ist to inform (	Client of change or to request	variance.

				/		
	3.2 Are the practical quantitation li  ☑ QAPP/IRSWP ☐ Lab?	imits the same as those specifie	ed by th	e Yes 🗹 No 🗌	N/A [_]	Comments:
	Note: The MADEP QA/QC Guidelines do therefore all criteria will default to values stip define criteria, QA/QC requirements defau may also apply.	oulated in the QAPP*. Where the QAF	PP does no	ot		
	Ammonia* ⊠= 0.1 mg/ L	Alkalinity**□ = 1 mg/L		Bicarbonate Alkalinity** □	= 1 mg/L	Carbonate Alkalinity** $\square = 1 \text{ mg/L}$
	Nitrate Nitrogen as N* $\square$ = .05 mg/L	Nitrite Nitrogen as N* ■ = .01 mg/	L L	Chloride* 🗀 – 1 mg/L		Hardness $*\Box = 2 \text{ mg/L}$
	Spec. Cond.** □ 3 umhos/cm	Total Organic Carbon** □ = 1 mg/	/L	Oil & Grease* □ = 5.5 mg	/L	Sulfate (EPA 300.0)*  2 mg/L
	COD:* Low – 20 mg/L	COD* High - 50 mg/L □		TDS* □ = 10 mg/L		TSS* $\square$ = 5 mg/L
	pH* $\square$ < 2 to > 12	Phenolic - 0.01 mg/L				
	Other parameter(list) Other parameter(list)	PQL =	☐ Source	e of PQL =		The state of the s
	Other parameter(list)	PQL =	☐ Sourc	e of PQL =		
ACTIO	N: If no, evaluate change with respect to san	nple matrix, preparation, dilution, mo	isture, etc.	If sample PQL is indetermine	nate, contact l	ab for explanation.
	3.3 Are the appropriate parameter results pr	resent for each sample in the SDG?		Yes No No	N/A []	Comments:
ACTIO	ON: If no, check Request for Analysis to verif	y if method was ordered and COC to	verify that	it was sent, and contact lab	for resubmiss	ion of the missing data
	3.4 If dilutions were required, were dilution	factors reported?		Yes   No [	N/A []	Comments:
ACTIO	ON: If no, contact the lab for submission.					
4.0	Method Blanks			Yes No No	N/A [_]	Comments:
	4.1 Are the Method Blank Summaries prese	ent?				
ACTIO	ON: If no, call the laboratory for submission of	of missing data.		8		
	4.2 Was a method blank analyzed for each 20 or less?	analysis batch of wet chemistry field	samples o	f Yes No	N/A []	Comments:

ACTIO	N: If no,	document discrepancy in case narrative and contact lab for justification. Consult seni-	or chemist fo	or action need	ded.		
	4.3 Is the	e method blank less than the PQL? (See Section 3.2 for PQLs).	Yes	No [_]	N/A [_]	Comments:	
	accordin	any method blanks have positive results for wet chemistry parameters? Qualify data ag to the following:	Yes []	No 🗹	N/A [_]	Comments:	
		mple concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the the concentration reported if greater than the PQL.					
	If the sai	mple concentration is $> 5 \times$ blank value, no qualification is needed.					
ACTIC qualifier		y blank has positive results, list all the concentrations detected and flagging level (fla	gging level =	= 5 × blank v	value) on the c	hecklist. List all affect	ed samples and their
5.0	Labora	tory Control Standards					
	5.1	Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less?	Yes 🔟	No [_]	N/A [_]	Comments:	
		, call laboratory for LCS form submittal. If data is not available, use professional mine qualification actions for data associated with the batch.					
	5.2	Is a LCS Summary Form present?	Yes 🖳	No [_]	N/A []	Comments:	
ACTIO	N: If no,	contact lab for resubmission of missing data.					
	5.3	Is any wet chemistry analyte LCS recovery outside the control limits?	Yes []	No 🗾	N/A []	Comments:	

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LCS	***	ifc.
LUS	111	113.

	LCS L	mitts.							
	Total Or COD L	$y^{**} \square = 80-120\%$ ganic Carbon** $\square = 80-120\%$ $ow^{*} \square = 80-120\%$ $ss^{*} \square = 80-120\%$	Bicarbonate Alkalinity** $\square = 80\text{-}120\%$ TDS** $\square = 80\text{-}120\%$ COD High* $\square = 80\text{-}120\%$ Chloride* $\square = 80\text{-}120\%$	Oil & O	Grease* □ = e Nitrogen	y** □ = 80 = 80-120% as N** □ = 0)* □ = 80-	80-120%	Ammonia Nitro	etivity *
	Other pa	nrameter(list)	%R =			☐ Rec Lin	nits=		
	Other pa	nrameter(list)	%R =		<del></del>	□ Rec Lin	nits =		
			(MADEP has not yet defined LCS recov						
		is (J). If LCS recovery is <10%,	qualify all positive sample results within the non-detect results are rejected (R).	e batch as (	(J). If recov	very is below	the lower lin	nit, qualify all po	ositive and no-detect results
Matrix	spikes n	nay be collected at different f	frequencies based on monthly, quarterly, ents for each set with the senior chemist	, or task t.					
	6.1	Were project-specific MS/MSD	s analyzed? List project samples that were s	spiked.	/		S	1	+ not rellected
ACTIO	ON: If no,	contact senior chemist to see if	any were specified.		Yes [ <u>√</u> ]	No []	N/A []	Comments: +	out not collected is sumples. Lab
ACTIO	6.2 <b>DN</b> : If no,	Is the MS/MSD Recovery For contact lab for resubmission of			Yes  _	No []	N/A [_]	Comments:	analyzed MS/MSI as batch QC
	6.3	Were matrix spikes analyzed matrix?	at the required frequency of 1 per 20 same	nples per	Yes 🗾	No []	N/A [_]	Comments:	, , , , , , , , , , , , , , , , , , , ,
ACTIO	ON: If any	matrix spike data is missing, ca	all lab for resubmission.						MS/ncs
	6.4	Are any wet chemistry analyte	spike recoveries outside of the QC limits?		Yes []	No I	N/A [_]	Comments:	MS/MSD analyzed for Nitrate/Nitrit Sulfate/chloride

	NOTE: %R SA	= <u>(SSR</u>	-SR) x	100%			Whe	re:	SSR =	Spiked SR		result result
	JA.			SA = Spike added	į							
	MS/MSD Recovery Limits:											
	Alkalinity* = NA /		Bicarbonate	Alkalinity* = NA	Carbona	te alkalinity*	= NA	Ammoni	a* (LACH	AT) 🗹 = 7	75-125%	
	Chloride*(SM 4500 Cl) $\square$ = 75-1	125%	Specific Co	nductivity * = NA	Total Or	ganic Carbor	$n^* = NA$	TDS**		_	·	
	Oil & Grease* = NA		COD Low*	□ = 75-125%	COD Hi	gh* □ = 75-	125%	Nitrate N	itrogen as	N** 🖂 = 7	75-125%	
	Nitrite Nitrogen as $N^{**} \square = 75$ -	125%	Hardness* l	□ = 75-125%	Sulfate (	(EPA 300.0)*	□ = 75-125	% pH* = N	IA	TSS*	= NA	
	Other parameter(list)			% F	=		_ □ Rec Li	mits =				
	* = Laboratory Limits	** = Oli	n QAPP Lim	its (MADEP ha	s not yet define	ed LCS reco	overy limits fo	r wet chem	istry anal	yses.)		
qualify p	NOTES: 1) If only one of the re 2) If the MS/MSD was N: MS/MSD flags only apply to positive results as estimated (J). If D recovery is < 30% and the samp	s performed b the sample sp If the recover ple is non-det	by the laborate piked. Do not price of the Mater, the result of the Mater, the result of the price of the material of the price of the	ory on a non-project of evaluate if sample S and MSD are low ts are considered un	et sample, no qua e concentration i ever than the low nusable and flagg	alification is a $s > 4X$ spike. er control linged (R).	required. If the recove nit but > 30%	ries of the M qualify bot	S and MS h positive	D exceed t results and	he upper conti non-detects (.	ol limit, ). If the
	N: Laboratory control limits app d, but no flags are applied.	ly when spik	ked sample re	esults fall within the	e normal calibra	tion range. If	dilutions are	required du	e to nigh s	ampie con	centrations, the	e data is
	6.5 Are any RPDs for MS/MSD	recoveries o	utside of the	QA/QC limits?			No [V]					
×	<b>NOTE:</b> RPD = $\frac{S - D}{(S + D)/2}$ x 10	00% Where	e S = MS res D = MSD			Yes []	No [ <u>V</u> ]	N/A []	Comme	nts:		
	MS/MSD RPD Limits:											
	RPD ≤20											
7.0	Laboratory Duplicate						/					z.
	Are the RPDs for the laboratory	/ duplicates <	<20% unless	otherwise specifie	d below?	Yes I	/ No []	N/A []	Comme	nts: Fo	only	uctivit,

		# 4 To 20 E 20 TO 20						
ACTIO	ON: If the RPD is greater than	n specified limits, qualify all results for the	at analyte as estimated (J)					
	pH* □ = 3%	TSS** □ = 6%		1	%			
8.0	Sampling Accuracy							
	ajority of ground water sar edicated tubing. Rinse bla	mples are collected directly from a tanks will not be collected.	np, process stream, or					
	8.1 Were rinsate blanks co associated samples from the	nks, obtain a list of the	Yes	No [1	N/A [_]	Comments:		
	8.2 Do any rinsate blanks have positive results?			Yes [_]	No []	N/A	Comments:	
ACTI		ts vs. blank results to determine if corn is < 5 × blank value, flag sample result n						to the table below.
		$_1$ is $> 5 \times$ blank value, no qualification is n			•	,	00%	
NOTE	: MADEP does not require	the collection of rinsate blanks.						
9.0	<ul><li>Field Duplicates</li><li>9.1 Were field duplicate field duplicates.</li></ul>	e samples collected? Obtain a list of samp	oles and their associated		No [_]		Comments:	
QA		collected per the required frequency?  Option 1(1 per 20)	on 3 (1 per 10) 🏻	Yes	No [_]	N/A [_]	Comments:	

9.3 Was the RPD  $\leq$  30% for waters  $\leq$  50% for soils? Calculate the RPD for results and

attach to this review.

ACTIC	<b>ON</b> :. Qualify data (J) for both sample results if the RPD exceeded.					
	Was any of the data qualified?	Yes []	No L	N/A [_]	Comments:	
	If so, apply data qualifiers directly to the DQE copy of laboratory report and <b>flag pages</b> for entry in database.					

#### REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.